AN INVESTIGATION OF THE EFFECTS OF SFAS NO.121 ON ASSET IMPAIRMENT REPORTING AND STOCK RETURNS

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Prior to *Statement of Financial Accounting Standards No.121* (SFAS No.121): *Accounting for the Impairment of Long-Lived Assets and Long-Lived Assets to Be Disposed Of*, managers had substantial discretion concerning the amount and timing of reporting writedowns of long-lived assets. Moreover, the frequency and dollar amount of asset writedown announcements that led to a large "surprise" caused the Financial Accounting Standards Board (FASB) and the Securities and Exchange Commission (SEC) to consider the need for a new standard to guide the recording of impairment of long-lived assets.

This study has two primary objectives. First, it investigates the effects of SFAS No.121 on asset impairment reporting, examining whether SFAS No.121 reduces the magnitude and restricts the timing of reporting asset writedowns. Second, the study compares the information content (surprise element) of the asset impairment loss announcement as measured by cumulative abnormal returns (CAR) *before* and *after* the issuance of SFAS No.121.

The findings provide support for the hypothesis that the FASB's new accounting standard does not affect the magnitude of asset writedown losses. The findings also provide support for the hypothesis that SFAS No. 121 does not affect the management choice of the timing for reporting asset writedowns. In addition, the findings suggest that the market evaluates the asset writedown losses after the issuance of SFAS No. 121 as good news for "big bath" firms, while, for "income smoothing" firms, the market does

not respond to the announcements of asset writedown losses either before or after the issuance of SFAS No. 121. The findings also suggest that, for "big bath" firms, the market perceives the announcement of asset impairment losses after the adoption of SFAS No. 121 as more credible relative to that before its issuance. This could be because the practice of reporting asset writedowns after the issuance of SFAS No. 121 is under the FASB's authoritative guidance, which brings consistency and comparability in asset impairment reporting.

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

The primary role of accounting standard setters is to define the accounting language that is used by management to communicate with the firm's external stakeholders. Stakeholders include current or potential investors and creditors; employees and their unions; financial intermediaries such as auditors, financial analysts, and bond rating agencies; regulators; suppliers; and customers. Corporate managers, through the use of accounting standards established by the Financial Accounting Standards Board (FASB), convey private information on their firm's performance to external capital providers and other stakeholders. Therefore, financial reporting is intended to allow the best-performing firms in the economy to distinguish themselves from the poor-performing firms, thus facilitating efficient resource allocation and stewardship decisions by stockholders (Healy and Wahlen 1998). New financial accounting standards, therefore, add value if they enable financial statements to effectively communicate differences in firms' economic positions and performance in a timely and credible manner.

Since financial accounting reports convey managers' private information on their firm's performance, standards have to permit managers to exercise judgment in financial reporting and to have discretion over reporting financial information. Managers can then use their knowledge about the business and its opportunities to select reporting methods

and estimates that match the firm's economics. However, because auditing is imperfect and management has its own incentives, management's use of judgment also creates opportunities for "earnings management" in which managers choose reporting methods and estimates that do not adequately reflect their firm's underlying economics. Therefore, management's use of judgment in financial reporting has both costs and benefits. The costs are the potential misallocation of resources that arise from earnings management. Benefits include potential improvements in management's credible communication of private information to external stakeholders. Thus, it is critical for standard setters, for example, the FASB, to evaluate standards in order to establish the reasonable degree of discretion that allows for higher accounting information value.

In March 1995, the FASB issued *Statement of Financial Accounting Standards No. 121* (SFAS No.121): *Accounting for the Impairment of Long-Lived Assets and Long-Lived Assets to Be Disposed Of*. This statement mandates that, under certain circumstances, property, plant and equipment; identifiable intangible assets; and goodwill arising from purchasing these assets should be deemed "impaired" and written down to a new carrying amount. This standard was issued in response to the diverse practices in recognizing asset writedowns and in response to the increased frequency and large amounts of asset writedowns. Prior to the issuance of SFAS No.121, no explicit guidance existed on accounting for the impairment of long-lived assets, whereas the authoritative accounting literature was specific regarding the appropriate treatment of declines in the value of short-term assets (e.g., inventory and marketable securities). Although the Accounting Principles Board (APB) *Opinion No. 17*: *Intangible Assets* (1970) indicates that one general problem associated with accounting for long-lived assets is determining

when carrying amounts have declined "permanently and substantially," a framework for determining when a writedown loss should be recorded and how should it be measured is not provided. This absence of explicit guidance for asset impairments permitted substantial management discretion over amounts, presentation, and timing of writedowns. Many of these writedown decisions had substantial economic consequences, for example, lowering reported earnings. Specifically, management had the ability to affect when the writedown was reported and to affect the amount of the writedown, given the subjectivity of the many estimates that were required. In addition to their timing and magnitude, management also varied the presentation of discretionary write-offs. For instance, during the 1960s, the fundamental question was whether material, but irregular or infrequent, charges were to be disclosed as prior-period adjustments in the statement of retained earnings or as a part of the earnings statement. In 1966, APB *Opinion No. 9*: *Reporting the Results of Operations* (APB9) adopted the all-inclusive income concept, although a few items continued to qualify as prior-period adjustments. While it is required by APB 9 to report most losses in the earnings statement, management sought to treat asset writedown losses as non-operating and nonrecurring (Elliott and Shaw 1988). Therefore, SFAS No.121 was issued to reduce management's discretion over reporting asset impairment in order to reduce the potential of earnings management.

Francis et al. (1996) believe that the expressed demands for authoritative guidance on accounting for asset impairments appear to be based on a notion that management takes advantage of the discretion afforded by the accounting rules to manipulate earnings. Earnings could be manipulated either by not recognizing impairment when it has occurred or by recognizing it only when it is advantageous to do so. Moreover, since

managers have incentives to manage earnings and investors are unable to undo these manipulations, an authoritative guidance on asset impairment was needed. In addition, the FASB's decision that accounting for long-lived assets and identifiable intangibles to be disposed of should be included in the scope of SFAS No.121 could be seen as evidence of the implicit motivation of adopting SFAS No.121. In the FASB's view, "if those assets were not addressed, an entity could potentially avoid the recognition of an impairment loss for assets otherwise subject to an impairment write-down by declaring that those assets are held for sale" (FASB, 1995, par 47). Therefore, SFAS No.121 was issued in order to restrict management's opportunities of managing earnings through asset writedown decisions.

Many members of the Financial Accounting Standards Advisory Council (FASAC) asserted that the problem of large "surprise" asset writedowns was significant enough to make asset impairment one of the most important issues for the FASB to address (FASB, 1995, par. 41). Large "surprise" asset writedowns might be seen either as possible management manipulation or real asset impairment. Zucca and Campbell (1992) reported that 87% of the firms disclosed asset writedowns either as a fourth-quarter adjustment in their annual report or as an asset writedown loss in their annual report without indicating to which quarter it pertained. This finding substantiates the claim of many analysts that the discretionary writedown of long-lived assets has a "surprise" element. Managers prefer to wait until earnings and stock performance for the fiscal year are known, so that they may then use this information in deciding whether to take a writedown or not (Alciatore et al. 1998). This action by firms encouraged the FASB to issue SFAS No.121 in order to minimize any possible management manipulation in

accounting earnings. That is, the FASB attempted to place some constraints on management's practice of asset writedown reporting.

However, the issuance of SFAS No.121 was not expected to eliminate or reduce management discretion over the timing and amount of asset writedowns. Rees et al. (1996) and Munter (1995), among others, argue that although SFAS No.121 provides specific examples of changes in circumstances that indicate a need for review of asset values, management's estimates of future cash flows determine whether a writedown is necessary. Furthermore, due to the absence of quoted prices for many firm-specific assets, it is likely that management estimates of fair value will determine the amount of the asset writedown. Zucca (1997) believes that there are some areas of SFAS 121 in which its application is subject to the judgment and assumptions of management: 1) the definition of impairment indicators, 2) the estimation of future cash flows from the use of the asset, 3) the asset grouping level at which testing and measurement occur, and 4) the depreciation methods chosen for the asset. Booker (1996) believes that much judgment will be needed to implement the standard. Identification of those assets that might be impaired, estimating future cash flows, fair values and making grouping decisions will all require judgment. Titard and Pariser (1996) state that FASB's approach in SFAS No.121 gives management substantial flexibility to exercise judgment in determining and reporting impairment losses. Some of its provisions are broad enough to enable management to formulate aggressive or conservative approaches to the recognition of asset impairment losses. Therefore, reducing management discretion over the timing and amount of asset writedowns by the issuance of SFAS No.121 is somewhat questionable.

This study investigates the effect of SFAS No.121 on asset impairment reporting, attempting to discover whether SFAS No.121 has decreased management's discretion over asset writedown decisions. Moreover, it examines the information content of asset impairment loss announcements after the issuance of SFAS No.121, as measured by the cumulative abnormal returns (CAR). The following section discusses the importance of the asset writedown announcement and its potential effect on the stock price.

1.2 The Importance of the Asset Writedown Event

The increasing prevalence of writedowns in the 1990s is documented in numerous articles in the popular press (e.g., Brown 1991), in the attention given to writedown by regulatory bodies (e.g., Spindel 1991), and in the academic empirical research on asset writedowns (e.g., Elliot and Shaw 1988; Elliot and Hanna 1996; and Francis et al. 1996). One example is Bausch & Lomb, which reported a surprise writedown loss that was headlined in *USA Today* dated January 26, 1995. Bausch & Lomb's stock price plunged 2 ¼ points on the day of that announcement. *The Wall Street Journal* began its report of Bausch & Lomb's 1994 earnings with the following explanation: "Bausch & Lomb, Inc., struggling to straighten out several core businesses, took several one-time costs that resulted in substantial loss in the period" (Bounds 1995, p. A4). Among Bausch & Lomb's problems were a decrease in its expected return on sales from its oral-care business, which it considered an asset impairment (Scofield 1995).

Elliott and Shaw (1988) and Francis et al. (1996) identified *Compustat* firms with calendar year-ends with negative special items constituting at least 1% of end-of-year total assets (see Table 1). A special item is defined in the *Compustat* database as a charge that is either unusual or infrequent, but not both, and is therefore separately disclosed in

the earnings statement on a pretax basis. As Table 1 clearly indicates, the frequency of writeoffs has increased sharply since 1982. The *Compustat* firms that reported negative special items increased from 59 firms in 1982 to almost double that in 1985 and then sharply increased within five years to 535 firms.

Moreover, Fried et al. (1989) conducted a study to provide insights into the development of additional standards for accounting and reporting impairments and writeoffs of long-lived assets. Part of their sample consisted of 324 companies with 623 writeoffs in the years 1980-1985, which reflected an average of almost two (1.92 = 623/324) writeoffs per firm over six years or one writeoff every three years. The distribution of writeoffs in terms of frequency and dollar amount for that sample is presented in Table 2. As this table clearly indicates, the frequency and total dollar amount of writeoffs increased sharply over time. Fried et al. (1989) emphasized that the increase in dollar amount is not solely the result of increased frequency but also of the average dollar amount of writeoffs, which grew sharply over the 1980-1985 period. The average post-tax amount was $21 million in 1980, increasing steadily to $44 million in 1984, and then almost doubling in 1985 to $100 million. On a pre-tax basis the results are similar. Moreover, based on Elliott and Shaw (1988), the average percentage of asset writedowns to total assets was 8.2% for the 1982-1985 period. Similarly, Francis et al. (1996) reported that the average percentage of asset writedowns to total assets was 6.7% for the 1988-1992 period. This clearly shows the importance of the asset writedown event and its effect on a firm's earnings and returns. The frequency and dollar value of asset writedowns made the FASB and the Securities and Exchange Commission (SEC)

consider a new standard to guide the recording of impairment of long-lived assets. The following section develops and discusses this study's research questions.

1.3 Research Questions

Many researchers (e.g., Francis et al. 1996; Rees et al 1996) believed that SFAS No.121 was issued as a response to management's discretion over asset writedowns, which led to large "surprises" that were reflected in the cumulative abnormal returns (CAR). Therefore, this study investigates whether SFAS No.121 decreased management's discretion over asset writedown decisions. Moreover, the study examines the information content of the asset impairment loss announcements after the issuance of SFAS No. 121. The research questions are as follows:

> What are the effects of SFAS No.121 on management's discretion over asset writedown reporting? Are the effects of SFAS No.121 reflected in the stock market?

To answer these research questions, the study has investigated the sources of discretion that management has when reporting asset writedowns. Management has substantial discretion over the *amount*, *presentation*, and *timing of reporting* writedowns of long-lived assets, which are three ways that are used when managing earnings. After the issuance of SFAS No.121, the discretion over asset writedown presentation was restricted by the statement's requirement of reporting the writedown losses as a component of income from continuing operations before income taxes. Management discretion about the amount and timing of reporting asset writedowns still exists. In order to examine whether SFAS No.121 reduces management discretion over asset writedowns decisions, this study examines the two other sources of management's discretion related to asset writedowns, that is, the amount and timing of reporting asset writedowns.

Moreover, the study investigates the effect of SFAS No.121 on the market surprise as reflected in the CAR. It is hypothesized that the information content of the asset writedown announcements *before* and *after* the issuance of SFAS No.121 will be different from each other.

Therefore, the research questions are as follows:

1. Does SFAS No.121 restrict management's opportunities to record long-lived asset writedowns? That is, does SFAS No. 121 reduce the magnitude and restrict the timing of reporting asset writedowns?

2. Do asset writedown losses that are reported after the issuance of SFAS No.121 have lower/higher information content as measured by CAR? That is, during the period surrounding the release of asset writedown announcement, does the CAR of companies adopting SFAS No.121 differ from the CAR of companies that announced asset impairment before the adoption of SFAS No.121[1]?

The issue of whether SFAS No.121 constrains management's discretion in recognizing asset impairment losses does not appear to have been investigated in the prior literature. Since the asset writedown literature is based primarily on observing and analyzing asset writedown practices in the absence of authoritative guidance, the findings from that literature cannot be fully utilized without investigating the effect of SFAS No.121 on the management's discretion over measuring and reporting asset impairment. This study also provides evidence as to whether previous asset writedown literature can be extended in the same direction, that is, asset writedowns as *discretionary* events. In addition, this study provides standard setters, i.e., the FASB, an answer to the central question as to whether too much judgment is allowed to management under SFAS No.121 in reporting asset writedowns.

In summary, the objective of this study is to investigate whether SFAS No.121 restricts management's discretion over reporting asset impairment and whether SFAS No.121 helped in reducing earnings management through reporting asset impairment losses. The next chapter presents an overview of the background of SFAS No.121 and reviews the various provisions of that standard.

[1] The same methodology was used by Mittelstaedt et al. (1992) in their study about the informativenses of "consistency modifications" to equity markets.

CHAPTER TWO

BACKGROUND ON SFAS NO.121

This study reviews and discusses SFAS No.121 and its major requirements, with a critique of some of those requirements in this chapter.

2.1 Introduction

Under generally accepted accounting principles (GAAP), long-lived assets are initially recorded at historical cost, which approximates fair value at acquisition. With the exception of the cost of most land acquisitions, cost is allocated through depreciation and amortization processes. Cost less depreciation or amortization is reported in the balance sheet and is referred to as the "carrying amount." Since accounting depreciation and amortization is aimed at cost allocation not valuation, carrying amounts of long-lived assets may be less than or greater than their fair values. Before SFAS No.121, accounting standards generally did not address when impairment losses should be recognized or how impairment losses should be measured (FASB, 1995, par 2).

In 1995, the FASB issued SFAS No.121, which provides guidance to preparers of financial statements on how to identify impaired assets, how to estimate the fair value of impaired assets, and how to disclose asset impairment to financial statement users. This standard helps users by bringing some consistency to a previously unstructured area of accounting (Scofield 1995). A summary of the underlying background of the SFAS No.121 adoption and the major requirements of it are presented next.

2.2 The Background of SFAS No.121 Issuance

Before SFAS No.121, companies generally wrote down an asset when there was evidence of permanent impairment in the ability to fully recover the asset's carrying amount. Companies did this without following any specific authoritative guidance (Titard and Pariser 1996). As a result, practice was diverse. Managers had the opportunity to estimate how much and when to record long-lived asset writedowns. This gave management some ability to manage their firm's earnings in their own or their firm's best interest. This fact led the regulatory bodies to discuss the impairment issue during the 1980s and up to the mid-1990s.

In July 1980, the Accounting Standards Executive Committee of the American Institute of Certified Public Accountants (AcSEC) sent the FASB an Issues Paper. AcSEC advised the FASB to provide specific authoritative accounting guidance for the impairment of assets. However, in the same year, the Financial Accounting Standards Advisory Council (FASAC) also discussed accounting for impairment of long-lived assets and recommended that the FASB continue its work on the conceptual framework project and other agenda topics before adding a project on impairment of assets (FASB, 1995, par 38 & 39). After five years, in March 1985, FASAC members believed that impairment of assets was the second most important issue for the FASB to address. Moreover, in September 1986, most FASAC members supported adding a project on impairment to the FASB technical agenda.

Other accounting authoritative bodies also saw the need to examine the issue of impairment. The FASB Emerging Issues Task Force (EITF) discussed the issue of impairment at its meetings in October 1984, December 1985, and February 1986. EITF

members noted that there were divergent measurement practices in asset impairment accounting. Its members also noted a significant increase in the frequency and size of writedowns of long-lived assets (FASB, 1995, par 40). In September 1986, the Committee on Corporate Reporting of the Financial Executives Institute (FEI) published the results of its *Survey on Unusual Charges*. They indicated various reporting and measurement practices (FASB, 1995, par 42). In May 1987, the Institute of Management Accountants (IMA) adopted a research study to examine accounting for asset impairment. The IMA research report, *Impairments and Writeoffs of Long-Lived Assets*, published in May 1989, also, noted a variety of disclosure practices and a steady increase in the number of writedowns. The report suggested that authoritative guidance on the accounting for impairment of long-lived assets was needed (Fried et al. 1989).

In November 1988, the FASB added a project to its agenda to address accounting for the impairment of long-lived assets and identifiable intangibles. In May 1989, a task force was formed to assist with the preparation of a Discussion Memorandum about accounting for impairment assets. The FASB's *Discussion Memorandum*: *Accounting for the Impairment of Long-Lived Assets and Identifiable Intangibles*, was issued in December 1990 (FASB, 1995, par 44).

In 1991 the FEI updated their survey and found that there still were divergent reporting and measurement practices. This further confirmed the need for authoritative guidance on impairments (FASB, 1995, par 42).

Later, the FASB issued an *Exposure Draft*: *Accounting for the Impairment of Long-Lived Assets*, in November 1993 that reviewed issues in the *Discussion Memorandum,* as well as some additional concerns. In November 1994, the FASB

published a *Special Report*: *Results of the Field Test of the Exposure Draft on Accounting for the Impairment of Long-Lived Assets*. It contained the results of a field test of the *Exposure Draft*. Ten entities participated in the field test by completing a comprehensive questionnaire. That questionnaire asked participants to detail the accounting policies and procedures used in the recognition and measurement of previous impairment losses and adjustments to the carrying amounts of assets to be disposed of. The questionnaire also asked what the effects would have been had the provisions of the *Exposure Draft* been applied to the same losses and adjustments. Then, the FASB, after considering numerous comments, issued SFAS No.121 in March 1995, effective for fiscal years beginning after December 15, 1995, making 1996 the first year during which most companies applied the standard.

2.3 Scope

SFAS No. 121 initially dealt with the impairment of long-lived assets and identifiable intangibles to be held and used. However, the FASB concluded that considering the goodwill arising from the acquisition of long-lived assets and identifiable intangibles was essential when testing for an assets impairment. Moreover, the FASB decided that accounting for long-lived assets and identifiable intangibles to be disposed of should be included in the scope of this statement. In the FASB's view, if those assets were not addressed, managers could potentially manage their firm's earnings through avoiding the recognition of an impairment loss by declaring that those assets were held for sale (FASB, 1995, par 47). SFAS No.121 applies to long-lived assets, certain identifiable intangibles, and goodwill related to those assets to be held and used and to

long-lived assets and certain identifiable intangibles to be disposed of (FASB, 1995, par 3).

2.4 Asset Impairment Investigations

For assets that continue to be used in operations, SFAS No.121 requires a two-stage approach to recognizing impairment losses (see Figure 1). An entity shall review long-lived assets and certain identifiable intangibles to be held and used for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. The FASB gave examples of some circumstances and events that require firms to investigate for asset impairment:

- A significant decrease in asset market value.
- A significant physical change in an asset or how it is used.
- A significant adverse change in business climate, legal factors or regulatory factors affecting an asset.
- A continuing operating or cash flow loss for revenue-producing assets (FASB, 1995, par. 5).

While these examples provide a useful starting point, they still leave management with a great deal of discretion for implementation. An important point to understand is that the existence of an "event or circumstance" does not automatically mean that an impairment loss will be recognized on assets held for use in operations. It does mean, however, that the entity must undertake a formal impairment evaluation in accordance with SFAS No.121. When there is reason to suspect the asset carrying amount is not recoverable, a company is required to review for impairment (Munter 1995).

This event-oriented approach does not require that every asset be evaluated every year. Evaluation of specific assets is required only when circumstances indicate that

impairment may have occurred. Firms need not continually monitor each asset for impairment but must continually monitor their business for events or circumstances that may indicate asset impairment (Scofield 1995). Existing information and analyses developed for management review of the entity and its operations generally will be the principal evidence needed to determine when an impairment may exist.

2.5 Evaluation for Asset Impairment

When a firm believes that the carrying amounts of some of its assets are not recoverable, it is required to perform a recoverability test as a means to determine whether impairment has occurred. The recoverability test is made by comparing the carrying amount of the asset to the sum of the future undiscounted cash flows and without including interest charges expected from the asset's use and eventual disposition (O' Brien 1996). If the estimate of the future cash flows projected from the use of the assets, including ultimate disposal (undiscounted and without interest), are less than the current carrying value of the asset, an impairment loss would be recognized (FASB, 1995, par. 6). "Future cash flows are the future cash inflows expected to be generated by an asset less the future cash outflows expected to be necessary to obtain those inflows" (FASB, 1995, par 6).

The recoverability test is an acceptable approach, in the FASB's point of view (FASB, 1995, par 67 & 68), for identifying when an impairment loss must be recognized. It is an approach that uses information that the FASB believes is generally available to an entity. From a practical standpoint, the FASB believes that the potential usefulness of this test is sufficient to overcome any objection.

However, one important question to address is "How long a future period does the estimated cash flow projections need to be made?" Unfortunately, that question is not specifically addressed in SFAS No.121. The theoretical answer, of course, is for the length of time the entity expects to use the asset. The major problem with this answer is that, in reality, an entity will be aggregating assets with differing remaining useful lives. Thus, if the company uses a time horizon longer than the remaining life of some assets, it will have to include an assumption of disposal and reinvestments in similar assets in constructing the net cash flow projections.

2.6 Impairment Loss Measurement

For any asset that fails the recoverability test, an entity would proceed to a second step, which deals with the measurement of the impairment loss. This step entails comparing the carrying amount of the asset to its fair value. The impairment loss will be measured as the amount by which the carrying amount of the asset exceeds the fair value of the asset. "The fair value of an asset is defined as the amount at which the asset could be bought or sold in a current transaction between willing parties, that is, other than in a forced or liquidation sale" (FASB, 1995, par 7).

The new cost basis of the impaired asset is its fair value on the date of the impairment. Since the fair value represents a new cost basis, no subsequent recoveries are permitted (FASB, 1995, par 11). The asset may be re-evaluated in the future, however, if it becomes apparent that additional impairment may have occurred (Zucca 1997). The interesting aspect of this requirement is that the loss amount is not the difference between the carrying amount and the expected future undiscounted cash flows. Rather, it is the amount by which the asset's carrying amount exceeds its fair value.

SFAS No. 121 also requires entities to apply a hierarchy to determine an impaired asset's fair value:

- The asset's market value if an active market exists.
- If no active market exists but such a market exists for similar assets, the selling prices in that market may help in estimating the fair value of the impaired assets.
- If no market price is available, a forecast of expected cash flows may help in estimating its fair value in which the cash flows are discounted at a rate that is commensurate with the risk involved (FASB, 1995, par 7).

Therefore, estimates of future cash flows are used to determine whether an impairment loss should be recorded. They may also be used for the determination of fair value if market values are either not available or unreliable. However, the former estimates of future cash flows are undiscounted and without interest, while the other estimates of future cash flows are discounted.

The FASB defended itself in adopting fair value by concluding that a company's decision to continue operating rather than selling an impaired asset essentially is a capital investment decision. Since management believes that operating the asset is more beneficial than selling it, the FASB feels that a new cost basis has to be recognized and that the fair value of the impaired asset is the most appropriate measure because fair value generally is used when a new cost basis is established (FASB, 1995, par 69). The FASB concluded that fair value was the best measure because it was consistent with management's decision process. The FASB believed that using fair value to measure an impairment loss was not a departure from the historical cost principle. Rather, it was consistent with principles practiced whenever a cost basis for a newly acquired asset must

be determined (Titard and Pariser 1996). It is a consistent application of principles practiced elsewhere in the current system of accounting.

The opponents of fair value believed that using fair value to measure an impaired asset fails to recognize the nature of that asset, permits "fresh-start" accounting based on management's decision to keep an asset rather than to sell it, and usually results in an excessive loss in the current period and an excessive profit in future periods. The opponents of fair value also believed that recoverable cost and recoverable cost including interest are some approaches other than fair value that can be used in measuring the impairment loss.

"Recoverable cost is measured as the sum of the undiscounted future cash flows expected to be generated over the life of an asset" (FASB, 1995, par 77). It views the recognition of an impairment loss as an adjustment to the historical cost of the asset. "Recoverable cost including interest generally is measured as either (a) the sum of the undiscounted expected future cash flows including interest costs on actual debt or (b) the present value of expected future cash flows discounted at some annual rate such as a debt rate" (FASB, 1995, par 82). The proponents of recoverable cost agree that the time value of money should be considered in the measure, but they view the time value of money as an element of cost recovery rather than as an element of fair value. However, since the impaired assets are owned by different entities that have different debt capacities, the FASB believed that the use of the recoverable cost including interest measure would result in numerous carrying amounts for essentially the same impaired assets (FASB, 1995, par 85).

In addition, an impairment loss that results from applying SFAS No.121 should be recognized prior to performing the depreciation estimates and method revision required under the 1970 *APB Opinion No. 20*: *Accounting Changes* (APB20). The provisions of APB 20 should be applied to the reporting of changes in the depreciation estimates and method regardless of whether an impairment loss is recognized.

2.7 Impairment Loss Recognition

This statement requires that long-lived assets and certain identifiable intangibles to be held and used or to be disposed of be reported at the lower of carrying amount or fair value less cost to sell, except for assets that are covered by the 1973 *APB Opinion No. 30*: *Reporting the Effects of Disposal of a Segment of a Business, and Extraordinary, Unusual and Infrequently Occurring Events and Transactions* (APB30). Assets that are covered by APB 30 will continue to be reported at the lower of carrying amount or net realizable value (FASB, 1995, par 7).

Theoretically, three alternative recognition criteria are used in practice: economic impairment, permanent impairment, and probability of impairment (FASB, 1995, par 59). The economic criterion recognizes losses whenever the carrying amount of an asset exceeds the asset's fair value. A continuous evaluation for impairment of long-lived assets is required under this approach, similar to the ongoing lower-of-cost-or-market measurement of inventory. To avoid recognition of writedowns that might result from measurements reflecting only temporary market fluctuations, the FASB favored using either the permanence or probability criterion (FASB, 1995, par 60).

When the carrying amount of an asset exceeds the asset's fair value, permanent loss recognition is called for under the permanence criterion. The permanence criterion is

too restrictive and virtually impossible to apply with any reliability. Moreover, the permanence criterion is not practical to implement, since requiring management to assess whether a loss is permanent requires management to predict future events with certainty, which is impossible (FASB, 1995, par 61).

The probability of impairment criterion calls for recognition of impairment loss when it is deemed probable that the carrying amount of an asset cannot be fully recovered. It uses the sum of the expected future cash flows (undiscounted and without interest charges) to determine whether an asset is impaired. If that sum exceeds the carrying amount of an asset, the asset is not impaired. If the carrying amount of the asset exceeds that sum, the asset is impaired, and the recognition of a new cost basis for the impaired asset is triggered. The FASB believes that this approach is consistent with the definition of "asset impairment", which is the inability to fully recover the carrying amount of an asset with a basic presumption underlying a statement of financial position that the reported carrying amounts of assets should, at a minimum, be recoverable (FASB, 1995, 62).

2.8 Goodwill

Goodwill arising in a business combination treated as a purchase must be allocated to the assets being measured for impairment. The goodwill amount will be eliminated first before the carrying value of any of the individually identifiable assets, whether tangible or intangible, is reduced for an asset impairment (FASB, 1995, par 12).

2.9 Asset Groupings

"Assets shall be grouped at the lowest level for which there are identifiable cash flows that are largely independent of the cash flows of other groups of assets" (FASB,

1995, par 8). Generally, grouping assets at the lowest possible level will result in the recognition of more impairment losses than if the assets were grouped at higher levels because of offsetting unrealized gains and losses. At the extremes, the evaluation of single assets will yield the greatest number of impairment losses, while considering the entity as the appropriate grouping level will result in the least number of impairment losses (Zucca 1997). Thus, as a general rule, the more inclusive the grouping scheme, the less will be the impairment loss, if any, be recognized.

The size and sophistication of the entity will have a bearing on the level of aggregation that can be used. An entity that is large, diversified, and decentralized will likely be able to aggregate at a lower level of operations. However, a small business that operates in one industry and within one marketplace might be required to make estimates for the entire organization as the basis for the impairment evaluation.

2.10 Reporting and Disclosing Asset Impairments

"An impairment loss for assets to be held and used shall be reported as a component of income from continuing operations before income taxes for entities presenting an income statement and in the statement of activities of a not-for-profit organization" (FASB, 1995, par 13). If an entity reports a subtotal such as "income from operations," the impairment loss should be reflected in that subtotal. An entity that recognized an impairment loss shall disclose all of the following in the financial statements:

- A description of the impaired assets and the facts and circumstances leading to the writedown;
- The amount of the impairment loss and how fair value was determined;

- The caption in the income statement in which the impairment loss is aggregated if that loss has not been presented as a separate caption or reported parenthetically on the face of the statement; and
- If applicable, the business segment affected (FASB, 1995, par 14).

There are many alternative ways, theoretically, for reporting an impairment loss: reporting the loss as a component of continuing operations, reporting the loss as a special item outside continuing operations, or separate reporting of the loss without specifying the classification in the statement of operations (FASB, 1995, par 108). The FASB adopted reporting the impaired loss as a component of continuing operations. Its rationale behind this adoption is that, if no impairment had occurred, an amount equal to the impairment loss would have been charged to operations over time through the allocation of depreciation or amortization. That depreciation or amortization charge would have been reported as part of continuing operations of a business enterprise. Further, an asset that is subject to a reduction in its carrying amount due to an impairment loss will continue to be used in operations.

2.11 Assets to be Disposed of

For assets that are to be disposed of, not held and used, the recognition and measurement of impairment losses depends on whether disposal of the impaired asset is covered under APB 30. When it does apply, SFAS No. 121 requires that the impairment loss be measured at the lower of carrying amount or net realizable value. If APB 30 does not apply, the impairment loss is measured at the lower of carrying amount or fair value less cost to dispose (FASB, 1995, par 8). An entity that holds assets to be disposed of shall report gains or losses resulting from the application of SFAS No.121 as a component of income from continuing operations before income taxes.

The FASB addressed assets to be disposed of in this statement to lower managers' opportunity to manage their firms' earnings. That is, an entity could potentially avoid the recognition of an impairment loss for assets otherwise subject to an impairment writedown by declaring that those assets are for sale (FASB, 1995, par 47).

2.12 Effective Date and Transition

"This statement shall be effective for financial statements for fiscal years beginning after December 15, 1995. Earlier application is encouraged. Restatement of previously issued financial statements is not permitted" (FASB, 1995, par 34).

2.13 Future of SFAS No. 121

In June 2000, the FASB published an *Exposure Draft* of a proposed statement of financial accounting standards titled *"Accounting for Impairment or Disposal of Long-Lived Assets and for Obligations Associated with Disposal Activities."* There are two primary objectives of this proposed statement. The first is to address significant issues relating to the implementation of SFAS No. 121. Some of these issues are as follows:

1. How to apply the provisions for long-lived assets to be held and used to a long-lived asset that an entity expects to sell or otherwise dispose of if the entity has not yet committed to a plan to sell or otherwise dispose of the asset.

2. How to determine whether there is an "indicated impairment of value" of a long-lived asset to be exchanged for a similar productive long-lived asset or to be distributed to owners.

3. What criteria must be met to classify a long-lived asset as "held for sale" and how to account for the asset if those criteria are met after the balance sheet date, but before issuance of the financial statements.

4. How to account for a long-lived asset classified as held for sale if the plan to sell the asset changes.

5. How to display, in the income statement, the results of operations during the holding period of a long-lived asset classified as held for sale with separately identifiable operations.

6. How to display, in the statement of financial position, a long-lived asset or a group of long-lived assets and related liabilities classified as "held for sale" (FASB 2000).

The second objective is to develop a single accounting model for "long-lived assets to be disposed of in order to address inconsistencies in accounting for such assets. That is, it will establish a single accounting model for long-lived assets to be disposed of, including segments of a business previously covered by APB30, and for certain obligations associated with a disposal activity (FASB 2000).

The proposed statement recommends some changes to SFAS No. 121. It would require that estimates of future cash flows used to test an asset for recoverability be developed using an expected cash flow approach. It would also require that estimates of future cash flows used to test an asset (group) for recoverability be developed for the remaining useful life of the asset or, if assets having different remaining useful lives are grouped, for the remaining useful life of the primary asset of the group. It would require that an asset to be disposed of by sale be classified as "held for sale" when the proposed criteria for a qualifying plan of sale are met. The proposed statement would extend the reporting of discontinued operations to all significant components of an entity, including, but not limited to, segments of a business as previously defined in APB30. In addition, the proposed statement would provide guidance for recognition of a liability for obligations associated with a disposal activity that arises from an entity's commitment to a plan to a) dispose of an asset (group) and b) discontinue an existing activity, whether or not the discontinuance involves the disposal of an asset (group) (FASB 2000).

The proposed statement would supersede SFAS No. 121. It would, however, retain the fundamental recognition and measurement provisions of SFAS No. 121 for "assets to be held and used" and the fundamental measurement provisions of that statement for "assets to be disposed of by sale." This proposed statement would also supersede the accounting and reporting provisions of APB30, which address the disposal of a segment of a business (FASB 2000).

In the next chapter, this study presents a review of the asset writedown literature and the related earnings management literature, with their major findings.

CHAPTER THREE

LITERATURE REVIEW

In this chapter, this study will present a literature review for asset writedown and earnings management literature related to asset writedowns.

3.1 Asset Writedowns Literature Review

3.1.1 Introduction

This section includes a review of the literature of asset writedowns. The term "writedown" refers to both complete and partial downward asset revaluations and the following terms may be used synonymously: asset write-offs, asset writedowns, and asset impairments. This review presents the effect of asset writedowns on firms' earnings and returns, the literature that studies managerial incentives behind the timing and amount of the asset writedowns, and it concludes with a summary of the major findings from the asset writedown literature.

3.1.2 Asset Writedowns: Impairment or Manipulation

Francis et al. (1996) examined the stock price response to the announcements of both the total amount of asset writedowns and the amounts of individual asset types that were written down. They wanted to determine whether asset writedown decisions were driven primarily by managers' incentives to manipulate earnings or by changes in the economic circumstances of the firm.

Their study provided evidence on whether the manipulation factors or impairment factors drive writedown decisions and whether market reactions to writedowns depend on these factors. The proxies for managerial incentives they used were: 1) a change in top management around the time of the writedown, 2) whether the firm's pre-writedown return on assets was better or worse than the return on assets for the prior year, and 3) a history of writedowns measured as the number of years the firm had writedowns out of the preceding five years. The proxies for asset impairment were: 1) past stock price performance, 2) book to market ratios, and 3) the historical performance of the firm's industry. They used a sample of 674 writedown announcements made during the period 1989-1992. For each year, the authors matched the set of writedown firms with an equal number of randomly selected non-writedown firms. Using a weighted Tobit model, they found that both factors were important determinants. However, when they analyzed writedowns by type (inventory; goodwill; property, plant, and equipment (PP&E); and restructuring changes), they found that managerial incentives play little or no role in determining inventory and PP&E write-offs, but play a substantial role in explaining other, more discretionary items, such as goodwill writedowns and restructuring charges writeoff. While the results show that, on average, investors viewed writedowns as negative news, there were significant differences in market responses across the types of writedowns. Francis et al. (1996) found support for the contention that writedowns were being used to manage earnings, similar to the findings of Zucca and Campbell (1992). Strong and Meyer (1987) asserted that managerial incentives play a major role in determining asset writedown policy.

3.1.3 Market-Adjusted Security Returns Behavior

Three possible market reactions exist to the announcement of asset writedowns. The *no-effects hypothesis* asserts that these writedowns are expected based on existing information or that they lack economic significance. The *bad news hypothesis* counters that the asset writedowns disclosures reveal a situation that is worse than expected by investors and would be associated with declining share prices and negative adjusted returns. The *good news hypothesis* predicts positive returns. It suggests that these writedowns are seen as part of effective management responses to worsening economic circumstances.

Elliott and Shaw (1988) analyzed the earnings performance and the return behavior of firms that disclose writedowns from both a long-term and a short-term perspective. The long-term perspective observes the economic conditions under which such writedowns occur. The short-term perspective helps in assessing the information content of the disclosures. They examined return behavior at the date of the announcement of the writedown to distinguish between alternative views of the event. Their sample contained 240 firms that took asset writedowns during 1982-1985. They chose firms from *Compustat* that had negative "special items" in their income statements exceeding 1% of total assets, and then they excluded firms with non-discretionary writedowns, such as inventory and receivable adjustments. Their findings indicated that firms disclosing large discretionary writedowns were larger than other firms in their industries (revenues and assets) and were more highly leveraged. Firms with large writedowns substantially underperform their industries in the years preceding and including the write-off year in terms of return on assets and return on equity. These

declining performances in accounting terms were associated with significantly lower security returns in periods three years before, coincident with, and the year and a half following, the announcement of the writedown. That is, in the months following the writedown, industry-adjusted returns remained negative. Moreover, Elliott and Shaw (1988) documented a significant one- and two-day industry-adjusted negative share return on average when the writedowns were disclosed. After controlling for other unexpected components of earnings, the cross-sectional variation in these returns is associated with the relative size of the writedown. The magnitude of these industry-adjusted two-day returns was also systematically related to other disclosures, including earnings.

Zucca and Campbell (1992) examined 77 writedowns taken by 67 firms from 1978 through 1983. They examined the average market-adjusted stock returns of the writedown firms for the 120 days surrounding the writedown announcement and found that there was no significant evidence of positive stock market reaction to the writedown announcement. Therefore, Zucca and Campbell (1992) and Elliott and Shaw (1988) respectively suggest that discretionary writedowns are either "no news" or "bad news."

Strong and Meyer (1987) examined a sample of 120 firms announcing asset writedowns during the period 1981-1985. For each writedown firm, they compared the financial performance of the firm prior to the writedown to the average performance of a control group of firms in the same industry that did not announce writedowns during 1981-1985. They found that the most important determinant of a writedown decision was apparently a change in senior management, especially if the new chief executive comes from outside the company. That is, during executive transition, senior management was

motivated to take large asset writedowns, believing that the higher reported earnings in future periods would strengthen the perception of management effectiveness. This reasoning was supported by their findings that there was a statistically insignificant average cumulative abnormal return prior to the announcement of asset writedowns and a statistically significant positive average cumulative abnormal return after the announcements. Therefore, Strong and Meyer (1987) suggest that discretionary writedowns are seen as "good news."

Frantz (1999) further supports these results. This study developed a model that predicted that firms that report discretionary writedowns should experience, on average, positive abnormal returns around the announcement dates of the discretionary writedowns. It interprets the positive abnormal returns as "good news." Frantz's model identifies managerial compensation plans as the economic incentive for reporting discretionary writedowns. It shows how discretionary writedowns may be used by managers to reveal private information about future earnings and how the financial market values the firm's equity according to the reporting choice made by managers.

Bunsis (1997) investigated whether the cash flow implications of writedown announcements lead to stock market reactions that are consistent with those implications. This study hypothesized that the nature of the underlying transaction, which gave rise to the writedown, affects the market reaction to the announcement of an asset writedown. This study predicted that the market would react positively (negatively) to transactions that would result in increased (decreased) expected future cash flows. This study is the first to link cash flows to stock market reaction in the context of asset writedown announcements. Bunsis examined 207 writedowns announced during 1983-1989. Bunsis

regressed the two-day announcement period returns on the amount of the writedown and the change relative to the prior year in quarterly net income. Results indicate that the larger the writedown, the more negative the two-day return. The results are similar to those of Elliott and Shaw (1988). Firms whose writedowns were classified as increasing (decreasing) expected future cash flows had positive (negative) market-adjusted returns for the two-day period (days 0,1)[2] around the writedown announcement. Bunsis concluded that the market does not react to all writedowns in a similar manner, but considers the cash flow implications of the events surrounding the writedown.

3.1.4 Repeated Accounting Asset Writedowns

Elliott and Hanna (1996) examined the information content of earnings conditional on the presence of large and repeated accounting writedowns by using stock price reactions at earnings announcement dates. Their analysis of the valuation implications of writedowns examines the weights that investors attach to the unexpected portions of earnings before the impact of writedowns and the weights attached to the writedowns themselves. Using quarterly *Compustat* data from 1970-1994, they obtained a sample of 2,761 firms that report at least one special item during the period. The sample consisted of 101,046 fiscal firm-quarters, 6,073 of which included a special item. The authors assumed that all special items in the *Compustat* were asset writedowns, which weakens their results concerning asset impairment. To determine the impact of repeated writedowns on the information content of earnings, the authors examined the change in the earnings response coefficient as a firm took more writedowns in sequence. They

[2] Day 0 is the day of the event.

regressed two-day market-adjusted returns on "unexpected earnings before writedowns" and "asset writedowns." They found that the "unexpected earnings before writedowns" were more important than were the "unexpected earnings after writedowns" in explaining market-adjusted security returns. Although this result indicates that investors focus more on pre-writedown earnings, they also find a significant relationship between the amount of the writedown loss and the movement in market-adjusted share prices around earnings announcements. Moreover, the information content of both "earnings before asset writedowns" and "asset writedowns" is impaired when a firm reports sequences of large asset writedowns. Specifically, as firms choose to report more asset writedowns, the relationship between "earnings before asset writedowns" and stock returns weakens, and the value relevance of "asset writedown loss" decreases.

3.1.5 Asset Writedowns and Concurrent Abnormal Accruals

In assessing whether firms systematically manage earnings in the year of the writedown, Rees et al. (1996) investigated abnormal accruals of firms recognizing permanent asset impairments in their financial statements. Their study used a sample of 277 firms taking 365 writedowns between 1987 and 1992. A modified version of the Jones (1991) model, based on Dechow et al. (1995), was used to estimate normal accruals. They found that abnormal accruals in the year of the asset writedown were significantly negative. In addition, the sample firms' earnings before the writedown were, on average, significantly negative relative to their industry medians. These results suggested that management acts opportunistically in the year of the writedown to improve future years' reported earnings. However, through additional analysis, Rees et al. (1996) suggested that firms have experienced a permanent shift in their accrual

balances in the writedown year, since the abnormal accruals in the writedown year do not reverse in subsequent years. The authors interpreted their findings as evidence that, instead of equating earnings management with opportunistic behavior, they considered the possibility that managers use their discretion to provide value-relevant signals to investors.

3.1.6 Summary

In summary, the asset writedown literature is based on the notion that the asset writedown decisions have a high degree of managerial discretion. This is, generally, due to the lack of authoritative guidance (prior to SFAS No.121) that governs the asset impairment practice in the business community. Therefore, after the issuance of SFAS No.121, it is important to assess the degree of discretion that remains with management for asset writedown decisions in order to utilize the previous literature and to guide the asset writedown studies in the future.

Based on the review of the prior asset writedown literature, the following conclusions can be reached. Writedowns are used partially to manage earnings. Moreover, in the year of the asset writedown, abnormal accruals, which are used to manage earnings, are significantly negative in order to lower earnings (Rees et al. 1996). The more discretion that management has over accounting reporting, the more likelihood that they will use the opportunity to accomplish strategic earnings management objectives, e.g., maximizing the bonus plans benefits. However, incentives play little or no role in less discretionary items such as inventory, but they play a substantial role in explaining more discretionary items such as goodwill writedowns (e.g., Francis et al. 1996, and Strong and Meyer 1987).

Conclusions related to earnings and abnormal returns behavior before asset writedowns are mixed. Some studies, such as, Fried et al. (1989) and Burton and Miller (1986), assert that earnings before asset writedowns are significantly negative. Others, such as, Zucca and Campbell (1992), observe that some firms wrote down their assets in a period with unusually high earnings. Similarly, in some studies, such as, Strong and Meyer (1987) and Frantz (1999), the abnormal adjusted returns during the writedown announcement are positive, and in other studies, such as, Elliott and Shaw (1988), are negative. Moreover, firms whose writedowns were classified as increasing (decreasing) expected future cash flows had positive (negative) market-adjusted returns for the two-day period (days 0,1) around the writedown announcement (Bunsis 1997). Investors in certain situations view writedowns as negative or "bad" news but in other situations they view them as positive or "good" news. Investors might counter the asset writedowns disclosures as a situation that is worse than expected that would be associated with declining share prices and negative adjusted returns. In other situations, these writedowns might be seen as part of effective management responses to worsening economic circumstances. The unexpected "earnings before writedowns" are more important than are the unexpected "earnings after the writedowns" in explaining market-adjusted returns (Elliott and Hanna 1996). Both are significant in explaining the excess returns. Nevertheless, the information content of both "earnings before writedowns" and "asset writedowns" is impaired when a firm reports sequences of large asset writedowns.

Alciatore et al. (1998) believe that there are potential new opportunities for research related to asset writedowns after the issuance of SFAS No.121. They state that the new financial standard can be used as a setting for detecting any potential changes in

earnings management activities resulting from the change in the accounting rules. That is, the relative size of writedowns as well as their timeliness may change. Moreover, changes in the nature, timing, and amounts of writedowns could result in corresponding changes in the market reaction to them, which, in general, this study examines.

3.2 Earnings Management and Asset Writedowns

This section is a review of the literature on earnings management through the use of asset writedowns and managerial incentives behind the timing and magnitude of these writedowns.

3.2.1 Introduction

Earnings management is the intentional intervention in the external financial reporting process with the intent of obtaining some private gains (Schipper 1989). It is a process of taking deliberate steps within the constraints of generally accepted accounting principles to bring about a desired level of reported earnings. "It occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company, or to influence contractual outcomes that depend on reported accounting numbers" (Healy and Wahlen 1998, p.6).

Managing income numbers is hardly a recent phenomenon. As early as the 1930s, firms routinely would write down long-lived assets to accommodate the amortization needed to achieve some target income (Bitner and Dolan 1998). Over the last three decades earnings management has been analyzed in various ways. Several studies have focused on three issues: a) whether firms actually manage income; b) the managing ability of various accounting techniques; and c) conditions under which earnings

management is effective. In analyzing earnings management, those earnings management studies have focused on a) objectives of earnings management (management motivations), b) objects of earnings management (operating income, net income), c) diminutions of earnings management (real or artificial), d) earnings management tools (i.e., extraordinary items, accounting accruals), and e) earnings management techniques ("big bath" or "income smoothing") (Ronen and Sadan, 1981).

3.2.2 Objectives of Earnings Management

The earnings management literature specifies two reasons why management manipulates its firm's earnings (e.g., Rees et al. 1996; Alciatore et al. 1998; and Guay et al. 1996). The performance measure hypothesis states that management uses earnings management tools in order to help it to produce a reliable and more timely measure of firm performance than using nondiscretionary tools alone. Under this hypothesis, management takes write-offs, not to manipulate earnings, but either to reflect declines in the values of assets due to poor firm performance, actions taken by competitors, changes in the economic climate, or changes in management strategies; or to provide value-relevant signals to investors that future earnings will improve and better times are ahead and that "past problems are being dealt with" (Alciatore et al. 1998). For example, recent evidence suggests that executive turnover may spark periods of earnings management (Bitner and Dolan 1998). In this setting, earnings shifted to the near future can be touted as evidence of the new manager's effectiveness.

The other earnings management objective is the opportunistic management hypothesis. Management uses earnings management tools to hide poor performance or to postpone a portion of unusually good current earnings to future years (Healy 1985; and

DeAngelo 1988). Under this hypothesis, managers are assumed to maximize their own wealth (Beattie et al. 1994). Watts and Zimmerman (1986), for example, have proposed that management has incentives to use techniques (such as big bath) to reduce reported earnings further so that future earnings (and bonuses) are increased. Performance-related cash bonuses, employment risk arising from the possibility of company failure or takeover, and the firm's share value are some reasons that encourage the opportunistic behavior practiced by managers. Managers who are holding firm's shares might have incentives to make choices that maximize the firm value (Beattie et al. 1994). Therefore, it is not necessarily that the opportunistic behavior practiced by managers would negatively affect other stakeholders.

3.2.3 Techniques of Earnings Management

Earnings management encompasses income smoothing behavior but also includes any attempt to alter reported income that would not occur unless management were concerned with the financial reporting implications. Earnings management literature generally tests two techniques: the "income smoothing" and the "big bath". These tests are performed within many different contexts such as management buyouts, change in accounting principle, litigation, and sudden product increase, and restructuring.

Income smoothing can be defined as the purposeful intervention in the process of reporting income numbers with the objective of dampening the fluctuations of those numbers around their trend (Bitner and Dolan 1998 and Moses 1987). Various reasons have been suggested as to why managers might attempt to smooth earnings. They may believe that smooth earnings are more highly valued or smooth earnings minimize the risk of possible debt and dividend covenant violations. That is, smooth income creates an

impression of reduced risk in the eyes of the participants in the financial markets. Theoretically, the reward for this impression can be a lower cost of capital and thus a higher market valuation.

"Big bath" accounting has emerged, unequivocally, as a managerial technique. The financial community has coined the phrase "big bath" as a generic label that highlights the magnitude of some of the writedowns and similar tools that leads to cleansing of financial statements (Elliott and Shaw 1988). Big bath accounting has been used to describe large-profit reducing writedowns or "income-decreasing discretionary accruals" in income statements (Walsh et al. 1991). An immediate benefit of big bath accounting is to make the vital equity numbers look better in future periods. It is a case of clearing the decks so that a company can show a rapid increase in earnings. Managers have been observed making large writedowns more frequently in order to create an advantageous financial base conducive to enhancing rates of return in subsequent years.

3.2.4 Earnings Management Tools

There are many different tools by which managers manipulate earnings. Managers might use accruals, change in accounting method, and change in capital structure (Jones 1991). "Accrual management refers to changing estimates such as useful lives, collectability of receivables, and other yearend accruals to try to alter reported earnings in the direction of a desired target" (Ayres 1994, p.28). While accrual management often is difficult to observe directly, analysis of patterns in accruals may reveal that the cash flow changes are moving in a different direction from accruals, which indicates earnings management.

A second tool of earnings management involves the timing of adoption of mandatory accounting policies. Typically, the FASB standards are enacted with a two-to three-year transition period prior to mandatory adoption, but with early adoption encouraged. While not all firms are affected by each standard issued, the relative frequency of new standards, combined with long adoption windows, provides an opportunity for managers to select an adoption year most favorable to the firm's financial picture. For example, adoption of *SFAS No. 52*: *Accounting for Foreign Currency Translation* gave the early-adopting firms (in 1981) the opportunity to increase earnings an average of $.38 per share, or about 11% of pre-change earnings (Ayres, 1994).

Another tool of managing earnings is to switch from one generally accepted accounting method to another. While a firm cannot make the same type of accounting method changes too frequently, it is possible to make several different types of accounting changes either together or individually over several periods.

3.2.5 Diminutions of Earnings Management

Broadly defined, earnings management falls into two categories: artificial earnings management and real earnings management (Bitner and Dolan 1998). Artificial earnings management is achieved by using discretionary accounting procedures that permit shifting costs and/or revenues from one accounting period to another. The use and effects of artificial earnings management vehicles typically are disclosed in the financial statements, thus making artificial smoothing relatively easy to detect.

A variety of specific actions can facilitate artificial earnings management, but generally either accounting procedures or accounting estimates deviate from what one would regard as those producing the "proper" matching of income and expense items.

Examples of changes in accounting procedures would include changes in methods of inventory valuation and depreciation. Changes in accounting estimates may involve decisions surrounding bad debts, capital asset lives, litigation costs, obsolete inventory, or pension assumptions.

Real earnings management, as the name implies, involves altering the timing of the occurrence of real transactions to achieve the earnings management objective. It also relates to the amount at which the transaction is reported. Timing the recognition of a transaction might be considered as a special case of real earnings management. These transactions include capital asset acquisitions; discretionary spending on advertising, research, and maintenance; or the recognition of sales transactions. Implementation of real earnings management is much broader based than artificial earnings management, because managers at all levels have some authority to execute these decisions.

3.2.6 Asset Writedowns and Earnings Management

As discussed earlier, there are a number of reasons why management might adjust earnings in such a way that the adjustment might have either a positive or negative effect on users' ability to predict a firm's performance. One technique that explains management incentive in managing earnings through the use of asset writedowns is the "big bath" hypothesis. Strong and Meyer (1987) argue that through cleaning up the balance sheet and reducing equity, a company can boost future profits and increase per-share return. Furthermore, they argue that a single large writedown might signal that past problems have been dealt with aggressively, while a lingering series of writedowns would erode confidence in management and induce declines in a firm's stock price. Cameron and Stephens (1991) support this argument by stating that management might

choose to take all negative adjustments to income in one year in an effort to "clear" the accounting records. By taking significant writedowns all in one year, management could be signaling that better times are ahead. In the case of asset writedowns, this reasoning is particularly appropriate, since an asset writedown results in decreased depreciation expense in the future. Moreover, a number of analysts have argued that "the bigger the bath, the better" (Strong and Meyer 1987). Fried et al. (1989) found that both turnover and profitability ratios deteriorated prior to an asset writedown but that, after the writedown, stock performance tended to improve. In addition, Strong and Meyer (1987) found that, the larger the writedown relative to book equity, the greater the announcement period excess return. This result lends support to the notion of 'the bigger the bath, the better." They found statistically significant positive average cumulative accounting returns after the announcement. The "big bath" hypothesis has been mentioned often as an earnings management technique that is used to accomplish a desired objective from recording asset writedowns; for instance, Mime (1986) and Burton and Miller (1986).

Income smoothing is another technique that explains management incentive in managing earnings through the use of asset writedowns. It describes an earnings pattern in which management aspires to maintain a steady and predictable rate of earnings growth. Management may try to record discretionary gains, losses, or accruals in the period that will best help them to attain their goal of steady growth. Therefore, a firm with an impaired asset might choose to adjust earnings downward in a year when earnings from ongoing operations are unusually high but are not expected to be as high in future years, or it may time the loss recognition to coincide with a non-discretionary gain. In this manner, management could smooth income and increase predictability of a firm's

performance. Foster (1986) states that one possible reason for income smoothing behavior is that managers adjust earnings in the belief that a consistent trend and lower variability in earnings increase investor interest since they indicate a lower level of risk. A thorough summary of the income smoothing literature has been developed by Ronen and Sadan (1981). Zucca and Campbell (1992) found that the majority of the firms wrote down their assets in a period of already below normal earnings (the "big bath" hypothesis), but 25% offset the writedown with other gains or unusually high earnings (the "income smoothing" hypothesis).

Cameron and Stephens (1991) state that the characteristics associated with positive non-recurring adjustments versus negative non-recurring adjustments to income are not known clearly. They believe that negative adjustments to income are following the "big bath" theory, while positive adjustments are used to smooth income into a consistent pattern in periods of negative unexpected earnings. They hypothesize that "forecast accuracy for firms with negative adjustments to income is less than for firms with positive adjustments" (Cameron and Stephens 1991, p.85). Under income smoothing theory, forecast accuracy is higher than under "big bath" theory, since earnings follow a consistent pattern. They find that firms with negative adjustments to income produce less accurate forecasts than those with positive adjustments. These results support the idea that there may be different underlying motivations for taking negative adjustments to income compared to positive adjustments. That is, negative adjustments are following the "big bath" theory, while positive adjustments are used to smooth income into a consistent pattern. Zucca and Campbell (1992) emphasize that negative adjustments such as asset

writedowns not only follow the "big bath" theory, but also could be used to smooth income when there are positive unexpected earnings prior to the writedown.

Heflin and Warfield (1997) studied the relation between earnings and stock-price changes among firms that have made writedowns. They investigated whether writedowns are overstated and whether they were recorded in a timely manner in order to manage future earnings. Their sample included 845 asset writedowns taken by 588 firms during 1985-1991. They compared the financial performance of the writedown firms to that of an industry-matched non-writedown sample and regressed annual raw returns from periods prior to and contemporaneous with the writedowns on writedown and non-writedown components of earnings. Writedown firms had significantly lower returns compared to industry peers for the writedown year and for the three years before it. In contrast, writedown firms' earnings were generally greater than or equal to industry benchmarks for the three years before the writedown, but their pre-writedown earnings fell below industry levels in the writedown year. Moreover, they found that the writedown amounts were weakly correlated with contemporaneous returns and strongly correlated with prior year annual returns. Heflin and Warfield (1997) suggested that firms manage their earnings through delaying the recognition of an impending writedown until a year in which earnings were poor irrespective of the writedowns. Furthermore, they suggested that the market appears to devalue some of the firm's assets well before the writedown period. They concluded that the decline in the value of the assets written off appears, on average, to begin up to two years before writedowns are booked.

3.2.7 Summary

Earnings management is the intentional intervention in the external financial reporting process in order to obtain some private gains. Asset writedowns are used as one way to achieve some target income. There are two reasons of why management manipulates its corporate's earnings: the performance measure hypothesis and the opportunistic management hypothesis. The former hypothesis states that management takes writedowns to reflect declines in the values of assets due to poor firm performance or to provide value-relevant signals to investors that future earnings will improve. The later hypothesis states that managers are assumed to maximize their own wealth by using techniques (such as big bath) to reduce reported earnings further so that future earnings are increased. Earnings management literature generally tests two techniques: "income smoothing" and the "big bath." The objective of "income smoothing" is to dampen the fluctuations of reported income numbers around their trend, whereas the objective of "big bath" is to clear the records so that a company can show a rapid increase in earnings in the near future. It is found that asset writedown announcements have some information content that is reflected in a firm's returns. That is, the larger the writedown relative to book equity, the greater the announcement period excess returns (Strong and Meyer 1987). However, it is found that management records asset writedowns to manage corporate's earnings. In periods of unexpected negative earnings, many firms are following the big bath technique by taking asset writedowns, while fewer firms are following the income smoothing technique by reporting asset writedowns in periods of unexpected positive earnings (Zucca and Campbell 1992). In the next chapter, this study develops the research hypotheses and methodology.

CHAPTER FOUR

RESEARCH HYPOTHESES AND METHODOLOGY

In this chapter, three hypotheses are developed and discussed. In addition, the chapter presents the research methodology and discusses the regression models used to test the hypotheses. Also, the sample selection procedure and the single factor market model that is used to calculate cumulative abnormal returns (CAR) are discussed.

4.1 Research Hypotheses

The research questions are as follows: What are the effects of SFAS No.121 on management's discretion over asset writedown reporting? Are the effects of SFAS No.121 reflected in the stock market? Specifically, "Does SFAS 121 reduce the magnitude and restrict the timing of reporting assets writedowns?" and "Do the asset writedown losses that are reported post-SFAS No.121 have smaller/larger informational content (surprise element) as measured by the CAR during a three-day event window relative to those pre-SFAS No.121?"

Three hypotheses related to these research questions are developed and presented below. The first and second hypotheses examine the amount of asset writedown and the timing of asset writedowns. This study posits that the issuance of SFAS No.121 restricts management's discretion over the magnitude of the reported asset impairment loss and the discretion over when to report such events. Earnings management can be seen as a possible explanation for the timing and amount of discretionary writedowns (Zucca and Campbell 1992). Two techniques can be used when managing earnings: "big bath" and

"income smoothing." The unexpected earnings direction specifies which technique will be used when managing earnings. The "big bath" technique is adopted in periods of unexpected negative earnings, whereas the "income smoothing" technique is adopted in periods of unexpected positive earnings (Zucca and Campbell 1992).

For firms faced with unexpected negative earnings ("big bath" firms), reporting additional asset writedown losses would lead to better accounting performance in future periods. By reporting asset writedowns in the current year, future depreciation expense would be reduced, which would increase the reported net income in the future years. Also, the return on asset ratio would increase in the future since the fixed asset amounts would decrease and earnings would increase. In addition, for firms faced with unexpected positive earnings ("income smoothing"), reporting more asset writedown losses also would lead to better accounting performance in future periods. Smoothing earnings and minimizing earnings fluctuations would result in lowering a firm's perceived risk. With the adoption of management incentive plans that are structured based on the firm's accomplishment of steady growth, managers would take higher asset writedowns whenever there are positive unexpected earnings. Pre-SFAS No.121, both of these earnings management techniques predict higher amounts of asset writedowns during periods of unexpected positive or negative earnings. However, post-SFAS No.121, management presumably would have less discretion in reporting higher amounts of asset writedown losses and in the timing of when to report asset writedowns since it provides some structure and rules that can be enforced by auditors. Therefore, it is expected that SFAS No.121 would reduce the average amount of asset writedowns. Hypothesis 1 (stated in the alternative form) is as follows:

H1: SFAS No.121 reduces the magnitude of asset writedowns relative to pre-SFAS No.121.

In addition, based on Zucca and Campbell (1992), "income smoothing" is characterized by periods in which pre-writedown earnings are higher than expected. By recording asset writedowns during such periods, reported earnings will be closer to but not less than the level expected. A "big bath" is characterized by periods in which pre-writedown earnings are below expected earnings. By recording asset writedowns during periods with unexpected negative earnings, reported earnings will be closer to but not more than the level expected. Therefore, "income smoothing" and "big bath" can be seen as two techniques that characterize the timing of when to report asset writedowns. Management might choose to adopt the "income smoothing" technique in one year and adopt the "big bath" technique in another year, depending on the direction of the unexpected earnings.

Firms that adopt the "income smoothing" technique in one year will report asset writedowns whenever there are unexpected *positive* earnings in order to smooth earnings; whereas firms that adopt the "big bath" technique will report asset writedowns whenever there are unexpected *negative* earnings. Hence, if SFAS No.121 restricts management's discretion over the timing of when to report asset writedowns, then the number of firms with negative (positive) unexpected earnings who have reported asset writedowns will be fewer post-SFAS No.121 than the number of firms who have negative (positive) unexpected earnings who have reported asset writedowns pre-SFAS No.121. Therefore, hypothesis 2 can be stated (in the alternative form) as follows:

H2: SFAS No.121 restricts the timing of when to report asset writedowns such that the number of firms with negative (positive) unexpected earnings that have

reported asset writedowns will be fewer post-SFAS No.121 than the number of firms who have negative (positive) unexpected earnings that have reported asset writedowns pre-SFAS No.121.

The third hypothesis is related to the information content of asset writedown announcements in the short-term, and it has two parts. For "big bath" firms, it posits that SFAS No.121 will reduce the "surprise" that is reflected in CAR due to the unexpected larger asset writedown announcements. The authoritative guidance established by SFAS No.121 would make asset writedown announcements more in line with stockholders' expectations due to the reduction in management's discretion over asset writedowns. Stockholders will receive the asset writedown news with more confidence and perceived reliability since earnings management is reduced and asset writedowns are manipulated less. Asset writedown losses post-SFAS No.121 are expected to be smaller than those of pre-SFAS No.121. This anticipation is expected to be reflected in the CAR.

For "income smoothing" firms, however, SFAS No.121 might increase the "surprise" from the unexpected large asset writedown announcements. This might be due to the reduction in the ability to smooth earnings that was used to reduce the fluctuation in earnings. Therefore, it is expected that SFAS No.121 would result in more earnings fluctuation that might lead to a larger "surprise" in CAR. Thus, hypothesis 3 has two parts that can be stated in the alternative form as follows:

H3a: During the three-day event window surrounding the release of the financial announcement of asset writedowns, cumulative abnormal returns (CAR) of "big bath" firms reporting asset writedowns after the adoption of SFAS No.121 are *smaller* than those of "big bath" firms reporting asset writedowns before the adoption of SFAS No.121.

H3b: During the three-day event window surrounding the release of the financial announcement of asset writedowns, cumulative abnormal returns (CAR) of "income smoothing" firms reporting asset writedowns after the adoption of SFAS No.121 are *larger* than those of "income smoothing" firms reporting asset writedowns before the adoption of SFAS No.121.

4.2 Research Methodology

Three models are used in this analysis: the random-effects Tobit model, the binary dependent variable panel data model, and the traditional random-effects panel data model. This study provides a brief summary of each theoretical model prior to discussing each model that is used in testing each hypothesis. In the following section, a brief discussion of the random-effects Tobit model is provided; this model is applied in testing the first hypothesis.

4.2.1 The Random-Effects Tobit Model

A panel data model offers two distinct advantages over a traditional linear regression model. First, a panel data model is able to capture both cross-section and time-series variation in the dependent variable under investigation. Second, a panel data model is able to measure, not only the effects that observable variables have on the dependent variable, but also the effects of relevant unobservable or non-measurable influences. Observable variables are incorporated into the model in the usual way. There are two means by which the unobservable variables are incorporated into the model: a Fixed–Effect (FE) model and a Random–Effects (RE) model. In the RE model, the unobservable or non-measurable factors that differentiate cross-section units are assumed to be best characterized as randomly distributed variables. The general form of the RE model is as given below:

$$Y_{it}^{*} = X_{it}\beta + u_i + \varepsilon_{it} \tag{4-1}$$

where: "*i*" indexes cross-section units (in this case, firms that may take an asset writedown) such that *i*= 1,2,…,*N*; and "*t*" indexes time-series units (in this case, years 1993 through 1997) such that *t*=1,2,….,*T*. The matrix X_{it} is of dimension (*NT*×*K*) and contains data on the observable explanatory variables of the model. The effects of relevant unobservable variables and time-invariant factors that characterize firm "*i*" in the model are captured by the (*NT*×1) vector u_i. The stochastic disturbances of the model are captured by the (*NT*×1) vector ε_{it}. Since both u_i and ε_{it} incorporate randomly distributed stochastic components of the model, one may combine these terms to form the composite error term as:

$$\omega_{it} = u_i + \varepsilon_{it} \tag{4-2}$$

The composite error term is assumed to be normally distributed with the following characteristics:

$$\omega_{it} \sim N(0, \Sigma), \qquad \Sigma = \begin{bmatrix} \sigma_u^2 & \sigma_u\sigma_\varepsilon \\ & \sigma_\varepsilon^2 \end{bmatrix}. \tag{4-3}$$

The variable Y_{it}^{*} in equation (1) is a latent variable that represents an unobservable index of ability or desire to report a non-zero amount of asset writedown loss by firm "*i*" at year "*t*". This study assumes that asset writedowns will take on a positive value if this measure of ability or desire is positive. Similarly, this study assumes that asset writedowns will take on a value of zero if this measure of ability or desire is zero or negative. As such, one may construct the observable left-censored dependent variable Y_{it} used in estimation as:

$$Y_{it} = \begin{cases} Y_{it}^{*} \; if & Y_{it}^{*} > \; 0 \\ 0 \; if & Y_{it}^{*} \leq \; 0 \end{cases}. \tag{4-4}$$

A censored dependent variable is one that is not observed over a continuous range due to the underlying stochastic choice mechanism of the variable. The most common form of censoring is from below at zero. This is the case in which the dependent variable of a regression model can take on many zero observations as well as several positive continuous values. Since firms may report asset writedowns in some years and may not in other years, Y_{it} will contain a significant number of zero observations as well as many positive observations. Because of the censored nature of this dependent variable, it is necessary to use a random-effects Tobit (weighted maximum likelihood) estimation procedure to obtain unbiased, consistent, and efficient estimates of the parameters in vector β. From an econometric perspective, it is not appropriate simply to ignore the "zero" observations in the study's sample and use only the positive (non-zero) values, because this means that the study does not use a truly random sample. This will make the model's parameter estimates biased and inconsistent. Moreover, it is not appropriate to include the "zero" observations and simply use the ordinary least squares method (OLS) in estimation since this leads to further bias in the study's results. These "zero" observations are masking the true underlying choice mechanism, and using OLS in this setting ignores this mechanism. Next, the specific model that is used in testing the asset writedown magnitude hypothesis is discussed.

4.2.2 The Asset Writedown Magnitude Hypothesis (H1)

The first hypothesis states that SFAS No.121 reduces the magnitude of asset writedowns relative to the magnitude of asset writedowns pre-SFAS No.121. The

following Random-Effects Tobit model that uses censored dependent variable is used to test the hypothesis:

$$WDM_{it} = \alpha_0 + \alpha_1 AE_{it} + \alpha_2 FAS121_{it} + u_i + \varepsilon_{it} \quad (4\text{-}5)$$

Where:

WDM_{it}	=	Asset writedown magnitude (dollar amount) for firm "*i*" in year "*t*".
AE_{it}	=	Reported accounting earnings excluding the asset writedown loss for firm "*i*" in year "*t*".
$FAS121_{it}$	=	1 if the observation for firm "*i*" collected in year "*t*" is subject to the rules of SFAS No.121, and 0 if not.
u_i	=	A firm-specific random variable that encompasses unobservable, time-invariant factors that differentiate firms.
ε_{it}	=	The error term of the regression model.

The variables WDM_{it} and AE_{it} are deflated by the total assets of the same year (t). The null and alternative hypotheses of interest are:

H0: $\alpha_2 = 0$

H1: $\alpha_2 < 0$

If the null hypothesis is rejected in favor of the alternative, this would suggest that SFAS No.121 mitigates the magnitude of asset writedowns. This result would be consistent with the notion that SFAS No.121 has restricted management's discretion regarding the magnitude of asset writedowns.

In the following section, a brief discussion of the binary dependent variable panel data model is provided; this model is applied in testing the second hypothesis.

4.2.3 The Binary Dependent Variable Panel Data Model

Dependent variables may be qualitative or quantitative in nature, depending on the type of research question that is under investigation. Qualitative dependent variables

take on discrete (integer) values. A binary dependent variable is one example of this type of variable. This type of variable takes on two values, 0 or 1. The general form of a binary model is as given below:

$$Y_{it}^{*} = X_{it}\beta + u_i + \varepsilon_{it} \tag{4-6}$$

Where: "*i*" indexes cross-section units (in this case, firms) such that i= 1,2,…,*N*; and "t" indexes time-series units such that t=1,2,….,*T*. The matrix X_{it} is of dimension ($NT \times K$) and contains data on the observable explanatory variables of the model. The effects of relevant unobservable variables, time-invariant factors that characterize firm "*i*" in the model, are captured by the ($NT \times 1$) vector u_i. The stochastic disturbances of the model are captured by the ($NT \times 1$) vector ε_{it}. The dependent variable, Y_{it}^{*}, is a continuous but unobservable index of utility, ability, or desire. In this study, for example, Y_{it}^{*} represents the desire of firm "*i*" to report a non-zero amount of asset writedown loss at time "t". It is also assumed that there exists a dichotomous realization of the dependent variable Y_{it}^{*}, call it "Y_{it}", such that:

$$Y_{it} = \begin{cases} 1 \, if & Y_{it}^{*} > 0 \\ 0 \, if & Y_{it}^{*} \leq 0 \end{cases}. \tag{4-7}$$

That is, Y_{it} takes on a value of 1 if firm "*i*" has a positive desire to report asset writedown losses at time "*t*", and Y_{it} takes on a value of 0 if firm "*i*" has no desire or negative desire to report asset writedown losses at time "*t*".

It is assumed that the error term of equation (4-6) follows a normal distribution since the dependent variable, Y_{it}^{*}, is continuous. In this case, the Maximum Likelihood

Probit estimation procedure is used. Since the observable dependent variable Y_{it} is binary, it is not appropriate from an econometric viewpoint to use OLS to estimate the model's parameters. This is because the error variance produced by an OLS regression applied to such a model will be heteroskedastic. In addition, t-tests and F-tests cannot be constructed if OLS is used in estimation of such a model since the error term will not be normally distributed.

The specific binary dependent variable panel data model that is applied in testing the second hypothesis is now presented.

4.2.4 The Asset Writedown Timing Hypothesis (H2)

Earnings management is examined as a possible explanation for the timing of discretionary writedowns. Hypothesis 2 states that SFAS No.121 restricts the timing of reporting asset writedowns such that the number of firms with negative (positive) unexpected earnings that have reported asset writedowns will be fewer post-SFAS No.121 than the number of firms with negative (positive) unexpected earnings that have reported asset writedowns pre-SFAS No.121. The following binary dependent panel data model is used to test hypothesis 2:

$$WD_{it} = \beta_0 + \beta_1 FAS121_{it} + \beta_2 BB_{it} + \beta_3 AE_{it} + u_i + \varepsilon_{it} \qquad (4\text{-}8)$$

Where:

WD_{it}	=	1 if firm "*i*" reports asset writedowns in year "*t*", and 0 otherwise.
$FAS121_{it}$	=	1 if the observation collected in year "*t*" for firm "*i*" is subject to the rules of SFAS No.121, and 0 if not.
BB_{it}	=	1 if firm "*i*" has negative unexpected earnings (a "big bath" firm) in year "*t*", and 0 if firm "*i*" has positive unexpected

earnings (an "income smoothing" firm) in year "*t*".

AE_{it} = Reported accounting earnings excluding the writedown loss for firm "*i*" in year "*t*".

u_i = A firm-specific random variable that encompasses unobservable, time-invariant factors that differentiate firms.

ε_{it} = The error term of the regression model.

WDM_{it} and AE_{it} are deflated by the total assets of the same year (t).

Based on Zucca and Campbell (1992), "income smoothing" is characterized by periods in which pre-writedown earnings are higher than expected. By recording the writedown, reported earnings are closer to but not less than the level expected. A "big bath" is characterized by periods in which pre-writedown earnings are below expected earnings. Therefore, "income smoothing" and "big bath" can be seen as two techniques that characterize the timing of asset writedown reporting. "Income smoothing" firms are expected to report asset writedowns whenever there are positive unexpected earnings in order to smooth earnings. Similarly, "big bath" firms will report asset writedowns whenever there are negative unexpected earnings. Hence, if SFAS No.121 restricts management's discretion over the timing of reporting asset writedowns, firms with negative (positive) unexpected earnings that have reported asset writedowns post-SFAS No.121 will be fewer than firms with unexpected negative (positive) earnings that report asset writedowns pre-SFAS No.121.

In order to test hypothesis 2, the following averages for "big bath" firms are calculated:

- The average number of "big bath" firms (independent of accounting earnings) that wrote down assets *after* the issuance of SFAS No.121= $E\,[WD \mid FAS121=1 \text{ and } BB=1] = (\beta_0 + \beta_1 + \beta_2)$.

- The average number of "big bath" firms (independent of accounting earnings) that wrote down assets *before* the issuance of SFAS No.121= $E\ [WD \mid FAS121=0\ and\ BB=1] = (\beta_0 + \beta_2)$.

The null and alternative hypotheses for "big bath" firms are:

H0: $(\beta_0 + \beta_1 + \beta_2) \geq (\beta_0 + \beta_2)$

H1: $(\beta_0 + \beta_1 + \beta_2) < (\beta_0 + \beta_2)$

Therefore, if the average number of "big bath" firms that wrote down assets post-SFAS No.121 is smaller than the average number of "big bath" firms that wrote down assets pre-SFAS No.121, this would suggest that, for "big bath" firms, SFAS No.121 restricts management's discretion over timing when asset writedowns are reported. That is, if SFAS No.121 restricts the timing of reporting asset writedowns and decreases the timing discretion that managers have, then, after the issuance of SFAS No.121, the average number of firms that report asset writedowns and experience negative unexpected earnings (NUE) will be smaller than the average number of firms that report asset writedowns and experience NUE pre-SFAS No.121.

Similarly, the following averages for "income smoothing" firms are calculated:

- The average number of "income smoothing" firms (independent of accounting earnings) that wrote down assets *after* the issuance of SFAS No.121= $E\ [WD \mid FAS121=1\ and\ BB=0] = (\beta_0 + \beta_1)$.
- The average number of "income smoothing" firms (independent of accounting earnings) that wrote down assets *before* the issuance of SFAS No.121= $E\ [WD \mid FAS121=0\ and\ BB=0] = (\beta_0)$.

The null and alternative hypothesis for "income smoothing" firms are:

H0: $(\beta_0 + \beta_1) \geq (\beta_0)$

H1: $(\beta_0 + \beta_1) < (\beta_0)$

If the average number of "income smoothing" firms that wrote down assets post-SFAS No.121 is smaller than the average number of "income smoothing" firms that wrote down assets pre-SFAS No.121, then the results would be consistent with the notion that SFAS No.121 also restricts the timing of reporting asset writedowns for "income smoothing" purposes. Firms that adopt the "income smoothing" technique will take asset writedowns whenever unexpected earnings are positive (Zucca and Campbell 1992). If SFAS No.121 restricts the timing of reporting asset writedowns for "income smoothing" firms after the issuance of SFAS No.121, the average number of firms that report asset writedowns and experience positive unexpected earnings (PUE) will be smaller than the average number of firms that report asset writedowns and experience PUE before SFAS No.121. Managers will not have the degree of timing discretion that they had before the issuance of SFAS No.121; that is, they will not have the same ability to decrease the magnitude of the PUE in order to smooth their firms' earnings.

"Expected earnings" are calculated by using a random walk model similar to Zucca and Campbell (1992) and Elliott and Hanna (1996). The random walk model assumes that, on average, the use of last period's reported earnings as a prediction of the current period's earnings is at least as good as any other model. This measure of expected earnings is compared to the reported earnings for each firm in the period in which the writedown was recorded. The difference between the actual earnings and the expected earnings is the "unexpected earnings."

In the following section, a brief discussion of the traditional random-effects panel data model is provided; this model is applied in testing the asset writedown informational content hypothesis (H3).

4.2.5 The Traditional Random-Effects Panel Data Model:

The random effects (RE) model incorporates both time-series and cross-sectional data. In this model, the unobservable or non-measurable factors that differentiate cross-section units are assumed to be best characterized as randomly distributed variables. A general expression of the model may be given by the equation below:

$$Y_{it} = X_{it}\beta + u_i + \varepsilon_{it}. \tag{4-9}$$

where "i" indexes cross-section observations (firms) from 1 to N and "t" indexes time-series observations from 1 to T. The vector Y_{it} is of dimension $(NT \times 1)$ and contains observations on the dependent variable of the model (CAR for firm "i" in year "t" for the period (-1, 1) around the 10K or AR release date). The matrix X_{it} is of dimension $(NT \times K)$ and contains observations of the exogenous (independent) variables of interest. These variables are observed for each firm "i" in each time period "t". The vector β is of dimension $(K \times 1)$ and contains the parameters that measure the effects of the exogenous variables. The effects of relevant unobservable variables and time-invariant factors that characterize firm "i" in the model are captured by the $(NT \times 1)$ vector u_i. The stochastic disturbances of the model are captured by the $(NT \times 1)$ vector ε_{it}. Since both u_i and ε_{it} incorporate randomly distributed stochastic components of the model, the study may combine these terms to form the composite error term as:

$$\omega_{it} = u_i + \varepsilon_{it}. \tag{4-10}$$

The composite error term is assumed to be normally distributed with zero mean. Since the covariance structure of the composite error term is non-ideal, as described in equation (4-3), the Random-Effects model given by equation (4-9) is estimated via the

generalized least squares (GLS) procedure in order to obtain unbiased, consistent, and efficient parameter estimates of the β vector. The specific traditional random-effects panel data model that is applied in testing the third hypothesis is next.

4.2.6 The Asset Writedown Informational Content Hypothesis (H3)

Hypothesis 3 states that during the three-day event window surrounding the release of the financial announcement of asset writedowns, CAR of "big bath" ("income smoothing") firms reporting asset writedowns after the adoption of SFAS No.121 are *smaller* (*larger*) than those of "big bath" ("income smoothing") firms reporting asset writedowns before the adoption of SFAS No.121. The objective of this hypothesis test is not only to provide evidence of stock price reactions to asset writedown announcements, but also to test the effect of SFAS No.121 on CAR, if any, surrounding the asset writedown announcements. It is expected that SFAS No.121 will have different effects on firms, depending on which technique those firms adopted, i.e., "big bath" or "income smoothing." The following RE model will be used to test the proposed hypothesis about the association of asset writedown announcements and the cumulative abnormal returns:

$$CAR_{it} = \gamma_0 + \gamma_1 \mathrm{UE}_{it} + \gamma_2 WDBBPST_{it} + \gamma_3 WDBBPRE_{it} + \gamma_4 WDISPST_{it} + \gamma_5 WDISPRE + \gamma_6 WDOTHRPS + \gamma_7 WDOTHRPR + u_i + \varepsilon_{it} \quad (4\text{-}11)$$

Where:

CAR_{it}	=	The cumulative abnormal stock returns for firm "i" in year "t" for the three-day period (-1, 1) around the 10K or AR release date, where 0 is the 10K or Annual Report (AR) release date whichever comes earlier.
UE_{it}	=	The unexpected earnings excluding the asset writedown loss using a random walk model for firm "*i*" in year "*t*".
$WDBBPST_{it}$	=	The assets writedown magnitude of a firm "*i*" that has negative unexpected earnings and negative net income (big bath) in year "*t*" that adopted SFAS No. 121.

$WDBBPRE_{it}$	=	The assets writedown magnitude of a firm "*i*" that has negative unexpected earnings and negative net income (big bath) in year "*t*" before the adoption of SFAS No. 121.
$WDISPST_{it}$	=	The assets writedown magnitude of a firm "*i*" that has positive unexpected earnings and positive net income "income smoothing" in year "*t*" that adopted SFAS No. 121.
$WDISPRE_{i}$	=	The assets writedown magnitude of a firm "*i*" that has positive unexpected earnings and positive net income "income smoothing" in year "*t*" before the adoption of SFAS No. 121.
$WDOTHRPS_{it}$	=	The assets writedown magnitude of firm "*i*" in year "*t*" that is neither a "big bath" or "income smoothing" firm that adopted SFAS No. 121.
$WDOTHRPR_{it}$	=	The assets writedown magnitude of firm "*i*" in year "*t*" that is neither a "big bath" or "income smoothing" firm before adopting SFAS No. 121.
ε_{it}	=	The error term of the regression model.

It is expected that SFAS No.121 will reduce the large "surprise" that was observed in CAR for "big bath" companies that report unexpected larger asset writedowns. The guidance provided by SFAS No.121 is expected to make the writedown announcements more consistent with stockholders' expectations due to the reduction in management's discretion over asset writedowns. Stockholders will receive the asset writedown news with more confidence and reliability since earnings management is reduced and asset writedowns are less manipulated. Therefore, the null and alternative hypotheses for the "big bath" firms are, respectively:

H0: $(\gamma_2 - \gamma_3) \geq 0$

H1: $(\gamma_2 - \gamma_3) < 0$

However, for "income smoothing" firms, the announcement of asset writedowns is used to smooth accounting earnings in order to establish an expected pattern of a firm's growth. This pattern is expected to decrease the firm's perceived risk and increase firm's

stock price. If the guidance established by SFAS No.121 restricts the smoothing practice due to the reduction of management's discretion over asset writedowns, then the earnings smoothing that was practiced should be reduced. Therefore, the "surprise" that is associated with asset writedown announcements is expected to increase since the stockholders would observe more of an unexpected fluctuation in the firm's earnings post-SFAS No.121. Therefore, the null and alternative hypotheses for the "income smoothing" firms are:

H0: $(\gamma_4 - \gamma_5) \leq 0$

H1: $(\gamma_4 - \gamma_5) > 0$

4.3 Cumulative Abnormal Returns (CAR)

In order to calculate CAR over the three-day event window around the 10K or AR release date, the single factor market model is employed. The CAR is regressed on the variables of interest to assess whether asset writedown announcements have any new relevant information that is reflected in securities prices.

The single factor market model is commonly used to measure the market reaction to an information signal by looking at the price reaction of the securities that may be affected by the information around the date of its announcement or disclosure (Henderson 1990). If one observes an abnormal price reaction, it is concluded that the announcement or disclosure has provided new information to market participants. In this study, the information signal is the reporting of asset writedown losses. The abnormal return equation, using the single factor market model, is presented as follows:

$$AR_{it} = R_{it} - \hat{a}_i - \hat{B}_i R_{mt} \qquad (4\text{-}12)$$

Where:

AR_{it} = The abnormal return during the three-day event window investigation period (-1, 1) for firm "*i*" in year "*t*".

R_{it} = The return on firm "*i*" during the three-day event window investigation period (-1, 1) in year "*t*".

R_{mt} = The return on the market index (*m*) during the three-day event window investigation period (-1, 1) in year "*t*".

The parameters, $\hat{a}_i$ and $\hat{B}_i$, are estimated from the market model using daily returns from the estimation period. Similar to Strong and Meyer (1987), the estimation period consists of 150 days prior to the 10K or AR release date, beginning from day –160 to day –11. This is to ensure that any possible reaction to the information of asset writedown losses is not picked up in the parameter estimates. Assuming that expected security returns are generated by a single-index market model, the market model used to estimate the parameter coefficients of a_i and B_i is defined as:

$$R_{it} = a_i + B_i R_{mt} + \varepsilon_{it} \quad (4\text{-}13)$$

Where:

R_{it} = $(P_{it} - P_{it-1})/(P_{it-1})$, security return for firm "*i*" at time "*t*".

P_{it} = The security price of firm "*i*" adjusted for dividends, splits, and new offerings, at time "*t*".

a_i = Intercept of the linear relationship for firm "*i*".

B_i = Parameter measuring the relationship between R_{it} and the independent variable, R_{mt}, for firm "*i*".

R_{mt} = The return on *Center for Research on Security Prices (CRSP)* market index (*m*) at time "*t*".

ε_{it} = Residual term of the return on securities for firm "*i*" at time "*t*".

The model applied to estimate the cumulative abnormal returns over the investigation period (-1, 1) for each firm is:

$$CAR_i = \sum_{-1}^{1} (R_{it} - \hat{R}_{it}) \tag{4-14}$$

Where:

R_{it} = The security return for firm "*i*" at time "*t*".

$\hat{R}_{it}$ = The predicted return for firm "*i*" at time "*t*".

= $\hat{a}_i - \hat{B}_i R_{mt}$

4.4 Sample Selection

The sample for this study is obtained through a keyword search of 1993-1997 SEC 10K's contained in the *Lexis/Nexis* database. Generally, the years 1993 through 1995 were years when asset writedowns were practiced without specific authoritative guidance; whereas 1996 and 1997 were years when asset writedowns were practiced following the guidance of SFAS No.121. The keyword search that is employed is: "IMPAIR! or WRIT! w/25 ASSET! and 10K." The *Compustat PC Plus* database is used to specify other financial items that are needed to conduct the analysis for all firms that are specified in the *Lexis/Nexis* database. Furthermore, the *CRSP* database is used to estimate CARs around the three-day event window (-1, 1). Firms with all necessary observed variables are included in the sample.

CHAPTER FIVE

RESEARCH FINDINGS

5.1 Introduction

SFAS No. 121 was issued in response to the diverse practices in recognizing asset writedowns, as well as the increased frequency and large amounts of asset writedowns. Prior to the issuance of SFAS No.121, no explicit guidance existed in accounting for the impairment of long-lived assets. This absence of explicit guidance for asset impairments permitted substantial management discretion over the magnitude and timing of writedowns. SFAS No.121 was issued to reduce management's discretion in reporting asset impairment in order to reduce earnings management (Francis et al. 1996). The FASB attempted to place some constraints on the practice of asset writedown reporting due to the fact that managers prefer to wait until earnings and stock performance for the fiscal year are known, in order to use this information in deciding whether or not to take a writedown (Alciatore et al. 1998). The FASB issued SFAS No.121 to minimize any possible management manipulation in accounting earnings. Therefore, the issuance of SFAS No. 121 was expected to reduce or even eliminate management discretion in reporting asset impairment.

From a different viewpoint, the issuance of SFAS No.121 was not expected to eliminate or reduce management discretion in the timing and amount of asset writedowns. Rees et al. (1996) and Munter (1995), among others, argued that although SFAS No.121 provides specific examples of changes in circumstances that indicate a

need for review of asset values, management's estimates of future cash flows, for instance, determine whether a writedown is necessary. In addition, Zucca (1997) believes that there are some areas of SFAS No. 121 in which its application is subject to the judgment and assumptions of management, such as the definition of impairment indicators, the asset grouping level at which testing and measurement occur, and the depreciation methods chosen for the asset. Titard and Pariser (1996) state that the FASB's approach in SFAS No.121 gives management substantial flexibility to exercise judgment in determining and reporting impairment losses. Therefore, reducing management discretion in the timing and amount of asset writedowns by the issuance of SFAS No.121 will not be achieved.

This study investigates these two viewpoints and analyzes the effect of SFAS No.121 on asset impairment reporting. It investigates whether SFAS No.121 has decreased management's discretion over asset writedown magnitude and timing. Moreover, this study investigates the short-term market reactions towards the announcement of asset writedown losses before and after the issuance of SFAS No. 121. In this chapter, results of testing each of the three proposed hypotheses are presented. Next, a discussion of the descriptive statistics of the data and some of the sample characteristics is presented.

5.2 Descriptive Statistics and Sample Characteristics

Table 3 summarizes the final sample of 436 observations. The observations are derived initially from the *Lexis/Nexis* database. An initial sample of 1,352 firm/year observations is derived from a keyword search of 1993-97 SEC 10K's included in the *Lexis/Nexis* database under "SEC Annual Reports to Shareholders" library.

This sample of 1,352 observations is reduced by 473 firm/year observations because some of the observed firms are filed in the "SEC Annual Reports to Shareholders" library under two different years due to different fiscal year-ends. The sample is again reduced by 102 observations related to the year 1992. The sample is further reduced by 71 firm/year observations and 74 firm/year observations that are not found in the *CRSP* database and the *Compustat PC Plus* database, respectively. Of the remaining observations, the sample is reduced by 196 firm/year observations for firms that reported asset writedown losses of less than 1% of their total assets since these reported losses are assumed to be immaterial and not significantly different from zero (Elliott and Shaw 1988 and Francis et al. 1996). As noted in Table 3, the final sample consisted of unbalanced data of 436 firm/year observations consisting of 132 different firms. This number of observations is similar to that in many other asset impairment studies. For instance, Fried et al. (1989) use a sample of 623 events from a six-year period, while Elliott and Shaw (1988) use a sample of 240 events spanning a four year period.

Tables 4 and 5 present the sample distribution based on year, "big bath" and "income smoothing" classification, as discussed in detail in the Asset Writedown Hypothesis (H2) section 4.2.4, and SFAS No. 121 adoption. Eighty-four firm/year observations (19%) are firms that adopted the "big bath" technique and applied SFAS No. 121, while 102 firm/year observations (23%) are firms that adopted the "big bath" technique without applying SFAS No. 121. Similarly, firms that adopted the "income smoothing" technique and applied SFAS No. 121 are 118 firm/year observations (27%), while 132 firm/year observations (30%) did not adopt SFAS No. 121. Therefore, 43% of

the sample are characterized as "big bath" observations, while 57% are characterized as "income smoothing" observations, and 46% of the sample are post-SFAS No. 121, while 54% of the sample is pre-SFAS No. 121 guidance. The average asset writedown loss magnitude for the sample is $5.52 million, while the average asset writedown magnitude as a percentage of total assets is 1.56%. For the sake of comparison with previous studies, Table 6 presents the distribution of firms that reported asset writedown losses over the sample period. It shows that 65% of those firms are "big bath" firms, while only 35% are "income smoothing" firms. These characteristics are similar to that of Zucca and Campbell (1992), who reported that 67% of their 67 firms in their sample adopted the "big bath" technique, while 33% adopted the "income smoothing" technique. Moreover, Zucca and Campbell (1992) reported that the average amount of writedown losses is $32.43 million, while the average asset writedowns as a percentage of total assets is 4.05%. Similarly, in this study, the sample of firms who reported asset writedown losses has an average amount of $34.89 million, which is 9.88% of the total assets.

5.3 Results of Testing the Three Different Hypotheses

Three models are used to analyze the effects of SFAS No. 121 on asset impairment reporting: the Random-Effects Tobit model, the Binary Dependent Variable Panel Data model, and the traditional Random-Effects Panel Data model. Each model was designed to test one of the three aspects of the research question: asset writedown magnitude, the timing of reporting the asset writedown loss, and the short-term market reaction toward asset writedown reporting.

5.3.1 Results of Testing Hypothesis 1 (Asset Writedown Magnitude)

The first hypothesis states that SFAS No.121 reduces the magnitude of asset writedowns relative to the magnitude of asset writedowns reported before SFAS No.121. The Random-Effects Tobit model used to test this hypothesis is repeated below for convenience:

$$WDM_{it} = \alpha_0 + \alpha_1 AE_{it} + \alpha_2 FAS121_{it} + u_i + \varepsilon_{it} \quad (4\text{-}5)$$

Where:

WDM_{it}	=	Asset writedown magnitude (dollar amount) for firm "*i*" in year "*t*".
AE_{it}	=	Reported accounting earnings excluding the asset writedown loss for firm "*i*" in year "*t*".
$FAS121_{it}$	=	1 if the observation for firm "*i*" collected in year "*t*" is subject to the rules of SFAS No.121, and 0 if not.
u_i	=	A firm-specific random variable that encompasses unobservable, time-invariant factors that differentiate firms.
ε_{it}	=	The error term of the regression model.

WDM_{it} and AE_{it} are deflated by the total assets of the same year (t).

The null and alternative hypotheses of interest are:

H0: $\alpha_2 \geq 0$

H1: $\alpha_2 < 0$

If the null hypothesis is rejected in favor of the alternative, it would indicate that the magnitude of asset writedowns is lower post-SFAS No. 121.

Exhibit 1 provides the results of the Tobit model for the sample of 436 observations. It is important before drawing any inference from the results to examine the significance and "goodness of fit" of the overall model.

The likelihood ratio statistic tests the null hypothesis that all the parameters of the model, except the intercept, are jointly equal to zero. It is calculated as 2 times

(unrestricted likelihood function – restricted likelihood function). The calculated likelihood function for this model is 12.441. Using the chi-square statistic, the critical value is 6.63, with one degree of freedom and a .01 significance level. Therefore, it is appropriate to reject the null hypothesis at a .01 significance level that all of the parameters of the model, except the intercept, are jointly equal to zero.

To test the "goodness of fit" of the overall model, it is appropriate to calculate the likelihood ratio index, which is calculated as 1 minus (the unrestricted log likelihood function divided by the restricted likelihood function). The calculated likelihood ratio index for this model is 13%. This percentage is acceptable as a sign of "goodness of fit" for the overall model, especially for a random-effects model. Since the calculated likelihood ratio statistic indicates that the full model fits the data significantly better than the model with the intercept only, it is appropriate to consider the inference that the results provide.

Results of estimating the equation (4-5) are presented in Exhibit 1. The primary question of interest is whether or not the issuance of SFAS No. 121 reduces the magnitude of asset writedown losses relative to that before the application of SFAS No. 121. A statistically significant and negative value for α_2 in this equation would suggest that SFAS No. 121 decreased the reported asset writedown magnitude. However, the results indicate that SFAS No. 121 did not have a significant effect on the reported asset writedown magnitude. In addition, the reported accounting earnings excluding writedown loss (*AE*) is significant. This suggests that the asset writedown magnitude is influenced, among other things, by the pre-writedown reported accounting numbers. This result is not surprising, since the FASB's approach in SFAS No.121 gives management substantial

flexibility to exercise judgment in determining and reporting the magnitude of impairment losses.

5.3.2 Results of Testing Hypothesis 2 (Timing of Reporting Asset Writedown Loss)

The second hypothesis states that SFAS No. 121 restricts the timing of reporting asset writedowns such that the number of firms with negative (positive) unexpected earnings reporting asset writedowns will be fewer post-SFAS No. 121 relative to the number of firms with negative (positive) unexpected earnings reporting asset writedowns pre-SFAS No. 121.

As discussed in chapter four, "income smoothing" and "big bath" may be viewed as two techniques characterizing the timing of asset writedowns. The "big bath" technique is applied in periods in which pre-writedown earnings are *below* expected earnings. Firms are assumed to report asset writedowns whenever there are negative unexpected earnings. Similarly, the "income smoothing" technique is expected in periods in which pre-writedown earnings are *above* expected earnings. Thus, firms are assumed to report asset writedowns whenever there are positive unexpected earnings in order to smooth earnings. Hence, if SFAS No.121 restricts management's discretion in the timing of reporting asset writedowns, firms with negative (positive) unexpected earnings that reported asset writedowns post-SFAS No.121 will be fewer than firms with unexpected negative (positive) earnings pre-SFAS No.121 reporting asset writedowns. As specified in chapter four, the Binary Dependent Panel Data model is used to test hypothesis 2 and is repeated below for convenience:

$$WD_{it} = \beta_0 + \beta_1 FAS121_{it} + \beta_2 BB_{it} + \beta_3 AE_{it} + u_i + \varepsilon_{it} \qquad (4\text{-}8)$$

Where:

WD_{it}	=	1 if firm "*i*" reports asset writedowns in year "*t*", and 0 otherwise.
$FAS121_{it}$	=	1 if the observation collected in year "*t*" for firm "*i*" is subject to the rules of SFAS No.121, and 0 otherwise.
BB_{it}	=	1 if firm "*i*" has negative unexpected earnings (a "big bath" firm) in year "*t*", and 0 if firm "*i*" has positive unexpected earnings (an "income smoothing" firm) in year "*t*".
AE_{it}	=	Reported accounting earnings excluding the writedown loss for firm "*i*" in year "*t*".
u_i	=	A firm-specific random variable that encompasses unobservable, time-invariant factors that differentiate firms.
ε_{it}	=	The error term of the regression model.

AE_{it} are deflated by the total assets of the same year (t).

The null and alternative hypotheses for "big bath" firms are:

H0: $(\beta_0 + \beta_1 + \beta_2) \geq (\beta_0 + \beta_2)$

H1: $(\beta_0 + \beta_1 + \beta_2) < (\beta_0 + \beta_2)$

The null and alternative hypothesis for "income smoothing" firms are:

H0: $(\beta_0 + \beta_1) \geq (\beta_0)$

H1: $(\beta_0 + \beta_1) < (\beta_0)$

The results of estimating equation (4-8) are reported in Exhibit 2. In order to draw inferences from the estimated results, it is important to examine the significance and "goodness of fit" of the overall model before.

As previously discussed, the likelihood ratio statistic tests the null hypothesis that all the parameters of the model, except the intercept, are jointly equal to zero. It is calculated as 2 times (unrestricted likelihood function – restricted likelihood function). The calculated likelihood function for this model is 7.635. With one degree of freedom and a .01 significance level, the chi-square critical value is 6.63. Therefore, it is

appropriate to reject the null hypothesis (at the .01 significance level) that all of the parameters of the model, except the intercept, are jointly equal to zero.

To test the "goodness of fit" of the overall Probit model, it is appropriate to examine both the likelihood ratio index and the frequency of correct predictions of the predicted outcomes. The calculated likelihood ratio index for this model is 3%. In addition, the frequency of correct predictions examines the frequency that the predicted and actual outcomes are the same. For this model, the frequency that the predicted and actual outcomes are the same for the dependent variable (*WD*) equal to zero is 97%. The frequency that the predicted and actual outcomes are the same for the dependent variable (WD) equal to one is 26% (Exhibit 2). That is, the model predicts 373 of 436, or 86%, of the observations correctly. Overall, the estimated Probit model is highly significant, with a reasonable "goodness of fit." This suggests that it is appropriate to consider the inference that the estimated results provide.

In Exhibit 2, the results suggest that (*FAS121*) is not significant at affecting asset writedown decisions, while the reported accounting earnings excluding writedown loss (*AE*) is significant. However, the model indicates that firms have different behavior toward deciding whether or not to report asset writedown loss in a particular year. That is, the (*BB*) variable, which divides the sample into two groups; "income smoothing" (positive unexpected earnings) and "big bath" (negative unexpected earnings), is significant. Therefore, "big bath" firms take asset writedown actions more frequently relative to "income smoothing" firms regardless of SFAS No. 121. Thus, it appears that SFAS No. 121 did not affect firms in timing when to report asset writedown.

5.3.3 Additional Analysis

As discussed previously, the primary question of interest is whether or not SFAS No. 121 affects the magnitude of asset writedowns. The results indicate that SFAS No. 121 does not have a significant effect on the magnitude of reported asset writedowns. However, SFAS No. 121 might be affecting the asset impairment reporting of some types of firms, but not all firms. Therefore, the study investigates the effect of SFAS No. 121 on the magnitude of asset writedown losses reported by "big bath" firms and "income smoothing" firms.

The following Tobit model is used in testing the magnitude hypothesis for both "big bath" firms and "income smoothing" firms:

$$WDM_{it} = \delta_0 + \delta_1 AE_{it} + \delta_2 BBPOST_{it} + \delta_3 BBPRE_{it} + \delta_4 ISPOST_{it} + \delta_5 ISPRE_{it} + \delta_6 OTHRPST_{it} + u_i + \varepsilon_{it} \quad (5\text{-}1)$$

Where:

WDM_{it}	=	Asset writedown magnitude (dollar amount) for firm "*i*" in year "*t*".
AE_{it}	=	Reported accounting earnings excluding the writedown loss for firm "*i*" in year "*t*".
$BBPOST_{it}$	=	1 if firm "*i*" has negative unexpected earnings, negative net income, and adopted SFAS No.121 in year "*t*", and 0 otherwise.
$BBPRE_{it}$	=	1 if firm "*i*" has negative unexpected earnings, negative net income, and does not adopt SFAS No.121 in year "*t*", and 0 otherwise.
$ISPOST_{it}$	=	1 if firm "*i*" has positive unexpected earnings, positive net income, and adopted SFAS No.121 in year "*t*", and 0 otherwise.
$ISPRE_{it}$	=	1 if firm "*i*" has positive unexpected earnings, positive net income, and does not adopt SFAS No.121 in year "*t*", and 0 otherwise.
$OTHRPST_{it}$	=	1 if firm "*i*" in year "*t*" is neither a "big bath" nor an "income smoothing" firm that adopted SFAS No. 121, and 0 if not.
u_i	=	A firm-specific random variable that encompasses unobservable, time-invariant factors that differentiate firms.
ε_{it}	=	The error term of the regression model.

The null and alternative hypotheses for "big bath" firms are:

H0: $\delta_2 \geq \delta_3$

H1: $\delta_2 < \delta_3$

However, the null and alternative hypotheses for "income smoothing" firms are:

H0 $\delta_4 \geq \delta_5$

H1: $\delta_4 < \delta_5$

Exhibit 3 provides the results of the Tobit model for the sample of 436 firm/year observations. As noted previously, the likelihood ratio statistic tests the null hypothesis that all the parameters of the model, except the intercept, are jointly equal to zero. The calculated likelihood function for this model is 11.763. Using the chi-square statistic, the critical value is 6.63, with one degree of freedom and a .01 significance level. Therefore, it is appropriate to reject the null hypothesis at a .01 level of significance. Moreover, to test the "goodness of fit" of the overall model, the likelihood ratio index is calculated. The calculated likelihood ratio index for this model is 21%, which is better than the original model (13%). Both the calculated likelihood ratio statistic and the calculated likelihood ratio index indicate that it is appropriate to consider the inference that the estimated results provide.

Results of estimating equation (5-1) are presented in Exhibit 3. The primary question of interest is whether or not the magnitude of asset writedowns for either "big bath" or "income smoothing" firms is affected by SFAS No. 121.

Similar to model (4-5), the reported accounting earnings excluding writedown loss (*AE*) is significant. In addition, for "big bath" firms, the null hypothesis that the

magnitude of asset writedowns after post-SFAS No. 121 is not different from that pre-SFAS No. 121 cannot be rejected (*BBPOST=BBPRE*). Similarly, for "income smoothing" firms, the null hypothesis that the asset writedown loss magnitude after the adoption of SFAS No. 121 is not different from that before SFAS No. 121 cannot be rejected (*ISPOST=ISPRE*). However, testing the null hypothesis that, after the adoption of SFAS No. 121, the asset writedown loss magnitude for "big bath" firms is not different from the asset writedown loss magnitude for "income smoothing" firms suggests that, on the average, "big bath" firms report .12m more asset writedown losses than "income smoothing" firms. Similarly, testing the null hypothesis that, before the adoption of SFAS No. 121, the asset writedown loss magnitude of "big bath" firms is not different from that of "income smoothing" firms suggests that, on the average, the "big bath" firms report .17m more asset writedowns than the "income smoothing" firms. These findings support the belief that the practice of reporting asset writedown losses is not affected by the FASB's new accounting standard. However, the results support the notion that firms have different behavior toward deciding the magnitude of asset writedowns.

5.3.4 Results of Testing Hypothesis 3 (Information Content)

Hypothesis 3 states that during the three-day event window surrounding the announcement of asset writedowns, the CAR of "big bath" ("income smoothing") firms reporting asset writedowns post-SFAS No.121 is *smaller* (*larger*) than the CAR of "big bath" ("income smoothing") firms reporting asset writedowns pre-SFAS No.121. This hypothesis test seeks to investigate whether or not short-term market reactions (if any) resulting from the announcement of asset writedown losses differ significantly before and after the application of SFAS No. 121. It is hypothesized that SFAS No.121 will have

different effects on firms, depending on which technique those firms adopted, that is, "big bath" or "income smoothing." As an initial investigation, the following Random-Effects model is used to test whether the cumulative abnormal return (*CAR*) is affected for "big bath" and "income smoothing" firms reporting asset writedowns post-SFAS No.121:

$$CAR_{it} = \gamma_0 + \gamma_1 UE_{it} + \gamma_2 WDM_{it} + \gamma_3 FAS121_{it} + \gamma_4 BB_{it} + \gamma_5 (WDM_{it} \times FAS121_t) + \gamma_6 (BB_{it} \times FAS121_t) + \gamma_7 (WDM_{it} \times BB_{it}) + u_i + \varepsilon_{it} \quad (5\text{-}2)$$

Where:

CAR_{it}	=	The cumulative abnormal stock returns for firm "i" in year "t" for the three-day period (-1, 1) surrounding the 10K or AR release date.
UE_{it}	=	The unexpected earnings excluding the asset writedown loss using a random walk model for firm "*i*" in year "*t*".
WDM_{it}	=	The magnitude of assets writedown of firm "*i*" in year "*t*".
$FAS121_{it}$	=	1 if the observation collected for firm "*i*" in year "*t*" is subject to the rules of SFAS No.121, and 0 if not.
BB_{it}	=	1 if firm "*i*" has negative unexpected earnings (a "big bath" firm) in year "*t*", and 0 if firm "*i*" has positive unexpected earnings (an "income smoothing" firm) in year "*t"*.
u_i	=	A firm-specific random variable that encompasses unobservable, time-invariant factors that differentiate firms.
ε_{it}	=	The error term of the regression model.

The null and alternative hypotheses for the "big bath" firms are respectively:

H0: $(\gamma_2 + \gamma_5 + \gamma_7) = 0$

H1: $(\gamma_2 + \gamma_5 + \gamma_7) \neq 0$

The results suggest, as presented in Exhibit 4, that the linear combination of the coefficients of the writedown variables (WDM, WDMFAS, and WDMBB) for "big bath" firms is significantly different from zero at a .01 level of significance. That is, the null hypothesis that the cumulative abnormal return for "big bath" firms reporting asset

writedowns after the adoption of SFAS No.121 is not different from zero is rejected. This finding suggests that, in the short-term, the market is affected by the announcement of asset writedown losses post-SFAS No. 121 by "big bath" firms. It perceives this announcement as *good news*. Testing the same hypothesis over wider event windows such as (-2, 2) and (-3, 3) produces similar results, with a higher significance in rejecting the null hypothesis for the "big bath" firms (Exhibits 5 and 6).

However, the null and alternative hypotheses for the "income smoothing" firms are:

H0: $(\gamma_2 + \gamma_5) = 0$

H1: $(\gamma_2 + \gamma_5) \neq 0$

The results suggest that the linear combination of the coefficients of the writedown variables (*WDM* and *WDMFAS*) for "income smoothing" firms is not significant at a 0.01 significance level (or even a 0.1 significance level). In addition, the unexpected earnings excluding the asset writedown loss variable (*UE*) are highly significant at a .01 significance level. This finding suggests that the market does not react to the asset writedown losses announced by the "income smoothing" firms after the adoption of SFAS No. 121. The same results are found when analyzing wider event windows. Testing the same hypothesis over wider event windows such as (-2, 2) and (-3, 3) produces similar results in failing to reject the null hypothesis for the "income smoothing" firms (Exhibits 5 and 6).

However, the primary question of interest is whether or not the cumulative abnormal returns (*CAR*) before the issuance of SFAS No. 121 differ from the CAR after the issuance of SFAS No. 121 when there are announcements of asset writedowns. The

following previously specified Random-Effects model is used to test the proposed hypothesis, which is repeated for convenience:

$$CAR_{it} = \gamma_0 + \gamma_1 UE_{it} + \gamma_2 WDBBPST_{it} + \gamma_3 WDBBPRE_{it} + \gamma_4 WDISPST_{it} + \gamma_5 WDISPRE + \gamma_6 WDOTHRPS + \gamma_7 WDOTHRPR + u_i + \varepsilon_{it} \quad (4\text{-}11)$$

Where:

CAR_{it}	=	The cumulative abnormal stock returns for firm "i" in year "t" for the three-day period (-1, 1) around the 10K or AR release date, where 0 is the 10K or Annual Report (AR) release date whichever comes earlier.
UE_{it}	=	The unexpected earnings excluding the asset writedown loss using a random walk model for firm "*i*" in year "*t*".
$WDBBPST_{it}$	=	The assets writedown magnitude of a firm "*i*" that has negative unexpected earnings and negative net income (big bath) in year "*t*" that adopted SFAS No. 121.
$WDBBPRE_{it}$	=	The assets writedown magnitude of a firm "*i*" that has negative unexpected earnings and negative net income (big bath) in year "*t*" before the adoption of SFAS No. 121.
$WDISPST_{it}$	=	The assets writedown magnitude of a firm "*i*" that has positive unexpected earnings and positive net income "income smoothing" in year "*t*" that adopted SFAS No. 121.
$WDISPRE_i$	=	The assets writedown magnitude of a firm "*i*" that has positive unexpected earnings and positive net income "income smoothing" in year "*t*" before the adoption of SFAS No. 121.
$WDOTHRPS_{it}$	=	The assets writedown magnitude of firm "*i*" in year "*t*" that is neither a "big bath" or "income smoothing" firm that adopted SFAS No. 121.
$WDBBPRE_{it}$	=	The assets writedown magnitude of firm "*i*" in year "*t*" that is neither a "big bath" or "income smoothing" firm before adopting SFAS No. 121.
ε_{it}	=	The error term of the regression model.

The null and alternative hypotheses for the "big bath" firms are:

H0: $(\gamma_2 - \gamma_3) \geq 0$

H1: $(\gamma_2 - \gamma_3) < 0$

As presented in Exhibit 7, the results suggest that the CAR for "big bath" firms after SFAS No. 121 is not significantly different from that for "big bath" firms before the issuance of SFAS No. 121 at a .01 significance level. However, testing the same hypothesis over a wider event window revealed that there is a significant difference between the CAR for "big bath" firms before and after the adoption of SFAS No. 121. That is, over a five-day event window and a seven-day event window, the cumulative abnormal returns for "big bath" firms that announce asset writedown losses before and after the adoption of SFAS No. 121 are significantly different from each other (Exhibit 8 and 9). This suggests that the cumulative abnormal returns of "big bath" firms resulting from the announcement of asset writedown losses after SFAS No. 121 are higher than those of "big bath" firms before SFAS No. 121.

However, the null and alternative hypotheses for the "income smoothing" firms are:

H0: $(\gamma_4 + \gamma_5) \leq 0$

H1: $(\gamma_4 + \gamma_5) > 0$

The cumulative abnormal returns (CAR) for "income smoothing" firms after SFAS No. 121 are not significantly different from those for "income smoothing" firms before the issuance of SFAS No. 121 at a .01 significance level (or .1 significance level). In addition, this finding holds for wider event windows such as a five-day event window and a seven-day event window (Exhibit 8 and 9).

To summarize, the results from the two models suggest that the market evaluates the asset writedown losses after the issuance of SFAS No. 121 as *good news* for "big bath" firms, similar to the findings of Strong and Meyer (1987) and Frantz (1999).

However, while the announcement of asset writedown losses affect the CAR after SFAS No. 121 higher than the announcement of asset writedown losses before SFAS No. 121, the SFAS No. 121 does not have any significant effects on the asset writedown magnitude or the timing of when to report such impairment. In addition, for "income smoothing" firms, the results suggest that the market does not respond to the announcement of asset writedowns either before or after the issuance of SFAS No. 121.

The difference in the reaction observed in the CAR for "big bath" and "income smoothing" firms when asset writedown losses were announced is not surprising. As the study indicated previously, there are three possible market reactions toward the announcement of asset writedowns: the no-effects hypothesis, the bad news hypothesis, and the good news hypothesis. The results of this study suggest that asset writedown losses reported by "income smoothing" firms are viewed by the market as manipulative actions that do not have real economic consequences. However, the results also suggest that asset writedown losses reported by "big bath" firms are viewed by the market as a sign of real changes occurring within these firms, which are expected to lead to better economic performance in the near future.

In addition, it is not surprising that, while the results suggest that SFAS No. 121 does not have an effect on the magnitude of the asset impairment losses, the CAR for "big bath" firms that announced asset writedown losses is higher after the adoption of SFAS No. 121 than the CAR for "big bath" firms that announced asset writedown losses before SFAS No. 121. The higher CAR observed after the adoption of SFAS No. 121 for "big bath" firms may suggest that the market perceives the announcement of asset impairment losses after the adoption of SFAS No. 121 as more credible since these

announcements are under the explicit authoritative guidance of the new standard. Both before and after the adoption of SFAS No. 121, the market perceives the asset writedown loss announcements for "big bath" firms as one type of news that shows the managements' attempts at developing and restructuring their firms in order to accomplish better performance. However, the market views the asset impairment announcements after the application of SFAS No. 121 with greater confidence in the reported numbers, since the practice of reporting asset writedowns after the issuance of SFAS No. 121 is under the FASB's authoritative guidance, which brings some consistency and comparability in asset impairment reporting.

CHAPTER SIX

RESEARCH SUMMARY AND CONCLUSIONS

The objective of this study was to investigate whether SFAS No.121 restricts management's discretion in reporting asset impairment and whether SFAS No.121 has resulted in an increase in reporting asset impairments and reduced earnings manipulation. This study investigated whether SFAS No.121 decreased management's discretion in asset writedown magnitude and timing. It examined the information content of asset impairment loss announcements after the issuance of SFAS No.121, as measured by the cumulative abnormal returns (CAR). That is, it investigated the short-term market reactions to the announcement of asset writedown losses both *before* and *after* the issuance of SFAS No. 121.

The findings provide support for the hypothesis that the SFAS No. 121 does not affect the magnitude of asset writedown losses. Further, the results suggest that the asset writedown magnitude is influenced, among other things, by the pre-writedown reported accounting numbers. The findings also support the hypothesis that SFAS No. 121 does not affect the timing of when to report asset writedowns. However, the findings suggest that firms have different behaviors toward deciding the asset writedown magnitude and whether or not to report asset writedown losses in a particular year. That is, "big bath" firms take more asset writedown actions of a higher magnitude relative to that of "income smoothing" firms, regardless of SFAS No. 121. The FASB's approach in SFAS No.121

gives management substantial flexibility to exercise judgment in determining and reporting the magnitude of impairment losses, which weakens the achievement of the intended objectives from the issuance of SFAS No. 121.

In addition, the findings of this study suggest that the market evaluates the asset writedown losses after the issuance of SFAS No. 121 as *good news* for "big bath" firms, while for "income smoothing" firms, the market does not respond to the announcement of asset writedown losses, either before or after the issuance of SFAS No. 121. The findings of this study suggest that asset writedown losses reported by "big bath" firms are viewed by the market as a sign of real changes occurring within these firms that are expected to lead to better performance in the near future. However, the results suggest that asset writedown losses reported by "income smoothing" firms are viewed by the market as either manipulative or immaterial actions that do not have real economic consequences. The findings also suggest that, for "big bath" firms, the market perceives the announcement of asset impairment losses after the adoption of SFAS No. 121 as more credible relative to that before the issuance of SFAS No. 121. This is due to the fact that the practice of reporting asset writedowns after the issuance of SFAS No. 121 is under the FASB's authoritative guidance, which brings some consistency and comparability in asset impairment reporting. As a result, the application of SFAS No. 121 provides users with better insight into management policies and actions.

The findings of this study also provide evidence as to whether SFAS No.121 constrains management's discretion in recognizing asset impairment losses. It supports the suspicion raised by many scholars about the attainment of the FASB's objective of bringing consistency in financial reporting practice through SFAS No. 121. Specifically,

it provides the FASB with an answer to a central question as to whether there is too much discretion allowed for management under SFAS No.121 in reporting asset writedowns. By leaving the underlying assumptions of evaluating and measuring asset impairment to be decided by management, there is a great risk that firms may take advantage of this as an opportunity to smooth income or to take a "big bath." However, the new proposed statement issued by the FASB on June 30, 2000, would limit some of the substantial flexibility that is allowed by management to determine and report asset impairment losses. The FASB's proposal would require the use of the present value of future cash flows instead of the market value as the best indicator of an asset's value. Discounted cash flows allow for less management manipulation because they require an asset to be valued at its true service potential. Additionally, the proposed statement would not allow management to use a market value that is not indicative of the asset's worth to the firm (i.e., a unique asset with a low market value, but high future cash flows). Therefore, the new statement would reduce or even prevent management from taking one large reduction against income in the current period in order to provide better net income in future periods.

This study provides evidence that asset writedown literature after SFAS No. 121 is still within the literature of *discretionary* asset writedowns. Future studies about asset impairment should be analyzed as discretionary events that are under management's influence, since they have some flexibility in deciding how much of a writedown to take and when to record it. This discretion in asset impairment reporting after the issuance of SFAS No. 121 allows for studies that investigate the motivation and incentives behind reporting such actions.

There are potential new opportunities for research in the area of asset writedown losses. One might investigate the association between reporting asset impairment losses and change in management and compare that association before and after the issuance of SFAS No. 121. New management might report more asset impairment either to "clean" the company records in an attempt to provide better earnings in future periods or to report substantial changes that would result in better economic performance. "Big bath" firms that have negative net income and have unexpected negative earnings might report fewer asset impairment losses when there is a management change after the issuance of SFAS No. 121 relative to that before it.

Future research that extends this study might include an investigation of the effect of the new proposed standard that will supersede SFAS No. 121 on asset writedown reporting. That is, one might investigate the effect of the new standard on the magnitude and timing of long-lived asset writedown reporting and also conduct a comparison between the effects of SFAS No. 121 and the effects of the new standard on asset impairment reporting.

There are many sets of potential users that may be interested in the information implicit in asset writedowns and/or users that are potentially affected by a firm's recording or not recording such asset writedowns. Some of these user groups include lenders; financial analysts; institutional investors; and firms that are involved in a potential merger, acquisition, or other forms of alliance. Future research could investigate the implications of firms' asset writedown behavior for these other constituencies and analyze the effect of SFAS No. 121 on these implications and constituencies. Thus, one avenue for developing new research in this area would be to examine the usefulness of

the accounting information related to asset writedowns for a broader spectrum of decision makers both before and after SFAS No. 121.

One limitation of the present research is the use of the entire reported writedown loss in analyzing the market reaction towards the announcement of asset writedown losses. A major concern in information content studies of writedowns is the difficulty of determining the market's expectation of the writedown amount at the time that it is announced. This study, similar to all asset writedown studies, uses the entire amount of the writedown rather than estimating the unexpected portion since the unexpected portion is unobservable. If some of the writedown is expected, using the entire writedown amount introduces measurement error, which causes biased and inconsistent estimates of the models' coefficients. Several studies, as reviewed in chapter three, provided evidence that the market anticipates writedowns, suggesting that the expected part of the writedown may not be equal to zero, as prior studies typically have assumed. This suggests that using the total writedown amount could limit the conclusions that are drawn from this study related to the information content of reported asset impairment.

In addition, there are data limitations that limit the generalizability of this research. Since the study relies on disclosures under SFAS No. 121, only a few years of observations are available for each firm; furthermore, firms are included only if they are included in the *Lexis/Nexis*, *Compustat PC*, and *CRSP* databases.

Finally, this study investigated the effects of SFAS No. 121 on asset impairment reporting and compared the information content (surprise element) of the loss announcement as measured by cumulative abnormal returns (CAR) *before* and *after* the

issuance of SFAS No. 121. Results will provide accounting standard-setters with insights and researchers with additional knowledge on asset impairment reporting issues.

APPENDIX

TABLES, EXHIBITS, AND FIGURES

TABLE 1

Compustat Firms With Negative Special Items in Excess of 1% Assets

During 1982-1992.

	Years From 1982 Through 1985[a]				**Years From 1988 Through 1992[b]**				
	1982	1983	1984	1985	1988	1989	1990	1991	1992
Firms with Negative Special Items	59	57	72	117	359	422	535	567	614

	Years			
	1982-1985 [a]		1988-1992 [b]	
	Mean	Median	Mean	Median
Writeoffs	143.6	49.7	76.2	8.8
% of Assets	8.2	5.0	6.7	3.6

a adapted from Elliott and Shaw 1988.
b adapted from Francis et al. 19

TABLE 2

Distribution of Writedowns During 1980-1985[1]
(in millions)

Year	Frequency of Occurrence	Total Pre-Tax Writeoff	Total Post-Tax Writeoff	Average Pre-Tax Writeoff	Average Post-Tax Writeoff
1980	41	$1,075	$650	$28.3	$21.0
1981	57	1,746	971	32.9	22.6
1982	103	5,487	3,548	57.2	47.3
1983	114	6,809	4,693	62.5	55.9
1984	128	7,694	4,222	63.1	44.0
1985	180	21,536	12,261	124.5	99.7
Overall	623	$44,347	$26,345	$75.0	$58.3

[1]Based on 324 companies representing 623 company-years of writedown announcements.
(This table is adopted from Fried et al. 1989.)

TABLE 3

Sample Characteristics

	1993 Firms	1994 Firms	1995 Firms	1996 Firms	1997 Firms	Totals
Firms from Lexis/Nexis database	358	269	234	246	245	1,352
Less: Firms that are reported in two different years.	(140)	(138)	(62)	(51)	(82)	(473)
Firms that are related to year 1992.	(102)	(0)	(0)	(0)	(0)	(102)
Firms that are not found in CRSP database.	(15)	(16)	(15)	(13)	(12)	(71)
Firms that have missing data in the Compustat PC Plus database.	(18)	(19)	(17)	(15)	(5)	(74)
Firms that reported asset writedown loss less than 1% of total assets.	(31)	(33)	(42)	(46)	(44)	(196)
Total observations included in the study	52	63	98	121	102	436

TABLE 4

The Study's Sample by Year, Earning Management Technique

	1993	**1994**	**1995**	**1996**	**1997**	**Total**
Number of Firms in each year.	52 (12%)	63 (14%)	98 (22%)	121 (28%)	102 (23%)	436 (100%)
Number of firms characterized as "big bath" firms in each year.	26 (6%)	28 (6%)	44 (10%)	40 (9%)	48 (11%)	186 (43%)
Number of firms characterized as "income smoothing" firms in each year.	26 (6%)	35 (8%)	54 (12%)	81 (19%)	54 (12%)	250 (57%)

TABLE 5

The Study's Sample by Earning Management Technique, and SFAS No. 121 Adoption

	Pre-SFAS121	**Post-SFAS121**	**Total**	**% of Total**
Big bath firms	102 (24%)	84 (19%)	186	43%
Income smoothing firms	132 (30%)	118 (27%)	250	57%
Total	234	202	436	100%
% of Total	54%	46%	100%	

The average asset writedown magnitude for the sample (in millions).	$5.52
The average asset writedown magnitude as a % of total assets.	1.56%

TABLE 6

Writedown Firms by Earning Management Technique and SFAS No. 121 Adoption

	Pre-FAS121	**Post-FAS121**	**Total**	**% of Total**
Big Bath firms	25 (36%)	20 (29%)	45	65%
Income Smoothing Firms	9 (13%)	15 (22%)	24	35%
Total	34	35	69	100%
% of Total	49%	51%	100%	

The average asset writedown magnitude for all firms who reported asset impairment in the sample (in millions).	$34.89
The average asset writedown magnitude as a % of total assets for all firms who reported asset impairment in the sample.	9.88%

EXHIBIT 1

The Results of the Random-Effects Tobit Model Used to Test Hypothesis 1

$$WDM_{it} = \alpha_0 + \alpha_1 AE_{it} + \alpha_2 FAS121_{it} + u_i + \varepsilon_{it} \quad (4\text{-}5)$$

Variable	Coefficient	Standard Error	t-Statistics	p-value	Mean of X
CONSTANT	-.15586	.0181311	-8.594	.0000	N/A
AE	-.49780	.0419019	-11.880	.0000	.01119251
FAS121	.01938	.0199366	.972	.3310	.46330275

Number of observations	436
Iterations completed	9
Unrestricted log likelihood function	-41.49217
Restricted log likelihood function	-47.71283
Chi-squared	12.44131
Degrees of freedom	1
Significance Level	.0041994

EXHIBIT 2

The Results of the Binary Dependent Panel Data Model Used to Test Hypothesis 2

$$WD_{it} = \beta_0 + \beta_1 FAS121_{it} + \beta_2 BB_{it} + \beta_3 AE_{it} + u_i + \varepsilon_{it} \quad (4\text{-}8)$$

Variable	Coefficient	Standard Error	t-Statistics	p-value	Mean of X
CONSTANT	-1.704737599	.23862437	-7.144	.0000	
FAS121	.159769028	.20866132	.766	.4439	.46330275
BB	.391652863	.18243465	2.147	.0318	.42660550
AE	-4.652798048	.78416176	-5.933	.0000	.01119251

Frequencies of actual & predicted outcomes:

	Predicted		Total
Actual	0	1	
0	355	12	367
1	51	18	69
Total	406	30	436

Number of observations	436
Iterations completed	12
Log likelihood function	-146.4365
Restricted log likelihood	-150.2543
Chi-squared	7.635619
Degrees of freedom	1
Significance level	.0057225

EXHIBIT 3

The Results of the New Tobit Model Used in Testing the Magnitude Hypothesis for Both "Big Bath" Firms and "Income Smoothing" Firms

$$WDM_{it} = \delta_0 + \delta_1 AE_{it} + \delta_2 BBPOST_{it} + \delta_3 BBPRE_{it} + \delta_4 ISPOST_{it} + \delta_5 ISPRE_{it} + \delta_6 OTHRPST_{it} + u_i + \varepsilon_{it} \quad (5\text{-}1)$$

Variable	Coefficient	Standard Error	t-Statistics	p-value	Mean of X
CONSTANT	-.13902471	.020684000	-6.721	.0000	N/A
AE	-.37493745	.048300585	-7.763	.0000	.01119251
BBPOST	.04321620	.034131879	1.266	.2055	.07568807
BBPRE	.06751088	.030254844	2.231	.0257	.09403670
ISPOST	-.07876846	.042185778	-1.867	.0619	.21788991
ISPRE	-.10683016	.047279832	-2.260	.0239	.25688073
OTHERPOS	.04888771	.027044981	1.808	.0707	.16972477

Number of observations	436
Iterations completed	13
Log likelihood function	-24.18535
Restricted log likelihood	-30.06664
Chi-squared	11.76257
Degrees of freedom	1
Significance level	.6043370E-03

Testing BBPOST=BBPRE

Chi-squared = .58 Sig. level = .44528

Testing ISPOST=ISPRE

Chi-squared = .29 Sig. level = .58935

EXHIBIT 4

The Results of the Traditional Random-Effects Panel Data Model Used in the Initial Testing of Hypothesis 3
Event Window (-1, 1)

$$CAR_{it} = \gamma_0 + \gamma_1 UE_{it} + \gamma_2 WDM_{it} + \gamma_3 FAS121_{it} + \gamma_4 BB_{it} + \gamma_5 (WDM_{it} \times FAS121_t) + \gamma_6 (BB_{it} \times FAS121_t) + \gamma_7 (WDM_{it} \times BB_{it}) + u_i + \varepsilon_{it} \quad (5\text{-}2)$$

Variable	Coefficient	Standard Error	t-Statistics	p-value	Mean of X
UE	14.959566	5.650227	2.648	.0081	-.01512296
WDM	-3.932525	19.476405	-.202	.8400	.01563876
FAS121	-.5921919	.834033	-.710	.4777	.46330275
BB	.3997163	.949036	.421	.6736	.42660550
WDMFAS	23.3835312	14.628928	1.598	.1099	.00784387
BBFAS	-.0336231	1.325459	-.025	.9798	.19266055
WDMBB	29.7101506	16.732326	1.776	.0758	.01157085
CONSTANT	-.3868075	.673624	-.574	.5658	N/A

Testing for "Big Bath" Firms:

Chi-squared = 11.37 Sig. level = .00075

Testing For "Income Smoothing" Firms:

Chi-squared = 2.06 Sig. level = .15157

EXHIBIT 5

The Results of the Traditional Random-Effects Panel Data Model Used in the Initial Testing of Hypothesis 3
Event Window (-2, 2)

$$CAR_{it} = \gamma_0 + \gamma_1 UE_{it} + \gamma_2 WDM_{it} + \gamma_3 FAS121_{it} + \gamma_4 BB_{it} + \gamma_5 (WDM_{it} \times FAS121_t) + \gamma_6 (BB_{it} \times FAS121_t) + \gamma_7 (WDM_{it} \times BB_{it}) + u_i + \varepsilon_{it} \quad (5\text{-}2)$$

Variable	Coefficient	Standard Error	t-Statistics	p-value	Mean of X
UE	14.55109248	6.035579	2.411	.0159	-.01512295
WDM	-1.97949205	20.773375	-.095	.9241	.01563875
FAS121	.37767808	.889442	.425	.6711	.46330275
BB	.70492144	1.012211	.696	.4862	.42660550
WDMFAS	22.59735618	15.607987	1.448	.1477	.00784387
BBFAS	-.23216909	1.413064	-.164	.8695	.19266055
WDMBB	35.24134770	17.838252	1.976	.0482	.01157085
CONSTANT	-.91811668	.7135696	-1.287	.1982	N/A

Testing "big bath" Firms:

Chi-squared = 12.90 Sig. level = .00033

Testing "income smoothing" firms:

Chi-squared = 2.04 Sig. level = .15359

EXHIBIT 6

The Results of the Traditional Random-Effects Panel Data Model Used in the Initial Testing of Hypothesis 3
Event Window (-3, 3)

$$CAR_{it} = \gamma_0 + \gamma_1 UE_{it} + \gamma_2 WDM_{it} + \gamma_3 FAS121_{it} + \gamma_4 BB_{it} + \gamma_5 (WDM_{it} \times FAS121_t) + \gamma_6 (BB_{it} \times FAS121_t) + \gamma_7 (WDM_{it} \times BB_{it}) + u_i + \varepsilon_{it} \quad (5\text{-}2)$$

Variable	Coefficient	Standard Error	t-Statistics	p-value	Mean of X
UE	18.15607361	7.1552934	2.537	.0112	-.01512296
WDM	-.99680849	24.654171	-.040	.9677	.01563876
FAS121	.54243255	1.055714	.514	.6074	.46330275
BB	1.26311669	1.201327	1.051	.2931	.42660550
WDMFAS	26.47158547	18.519590	1.429	.1529	.00784386
BBFAS	.38018409	1.677611	.227	.8207	.19266055
WDMBB	37.05535228	21.177893	1.750	.0802	.01157085
CONSTANT	-.99723446	.851067	-1.172	.2413	N/A

Testing "big bath" firms:

Chi-squared = 11.48 Sig. level = .00070

Testing "income smoothing" firms:

Chi-squared = 2.20 Sig. level = .13776

EXHIBIT 7

The Traditional Random-Effects Panel Data Model Used to Test Hypothesis 3
Event Window (-1, 1)

$$CAR_{it} = \gamma_0 + \gamma_1 \mathrm{UE}_{it} + \gamma_2 WDBBPST_{it} + \gamma_3 WDBBPRE_{it} + \gamma_4 WDISPST_{it} + \gamma_5 WDISPRE + \gamma_6 WDOTHRPS + \gamma_7 WDOTHRPR + u_i + \varepsilon_{it} \quad (4\text{-}11)$$

Variable	Coefficient	Standard Error	t-Statistics	p-value	Mean of X
UE	13.129311	5.06704	2.591	.0096	-.01512296
WDBBPST	44.999352	15.10539	2.979	.0029	.00403817
WDBBPRE	25.265699	11.91804	2.120	.0340	.00659231
WDISPST	61.912482	99.99204	.619	.5358	.00021050
WDISPRE	-138.097226	217.06224	-.636	.5246	.00009483
WDOTHRPS	18.574598	13.16456	1.411	.1583	.00359524
WDOTHRPR	-.933024	42.38083	-.022	.9824	.00110775
Constant	-.479885	.44457	-1.079	.2804	N/A

Testing “big bath” firms:

Chi-squared = 1.75 Sig. level = .18542

Testing “income smoothing” firms:

Chi-squared = .70 Sig. level = .40164

EXHIBIT 8

The Traditional Random-Effects Panel Data Model Used to Test Hypothesis 3
Event Window (-2, 2)

$$CAR_{it} = \gamma_0 + \gamma_1 UE_{it} + \gamma_2 WDBBPST_{it} + \gamma_3 WDBBPRE_{it} + \gamma_4 WDISPST_{it} + \gamma_5 WDISPRE + \gamma_6 WDOTHRPS + \gamma_7 WDOTHRPR + u_i + \varepsilon_{it} \quad (4\text{-}11)$$

Variable	Coefficient	Standard Error	t-Statistics	p-value	Mean of X
UE	11.7750557	5.39557	2.182	.0291	-.015122955
WDBBPST	62.1740001	16.04680	3.875	.0001	.004038172
WDBBPRE	29.6221035	12.67010	2.338	.0194	.006592313
WDISPST	73.0599966	106.20545	.688	.4915	.000210458
WDISPRE	38.0337913	229.46263	.166	.8684	.000094827
WDOTHRPS	14.9074282	13.98425	1.066	.2864	.003595234
WDOTHRPR	6.1407671	45.07322	.136	.8916	.001107748
Constant	-.5028618	.46600	-1.079	.2805	N/A

Testing “big bath” firms:

Chi-squared = 4.22 Sig. level = .03989

Testing “income smoothing” firms:

Chi-squared = .02 Sig. level = .88959

EXHIBIT 9

The Traditional Random-Effects Panel Data Model Used to Test Hypothesis 3
Event Window (-3, 3)

$$CAR_{it} = \gamma_0 + \gamma_1 \mathrm{UE}_{it} + \gamma_2 WDBBPST_{it} + \gamma_3 WDBBPRE_{it} + \gamma_4 WDISPST_{it} + \gamma_5 WDISPRE + \gamma_6 WDOTHRPS + \gamma_7 WDOTHRPR + u_i + \varepsilon_{it} \quad (4\text{-}11)$$

Variable	Coefficient	Standard Error	t-Statistics	p-value	Mean of X
UE	11.9615276	6.46932	1.849	.0645	-.015122955
WDBBPST	59.3588797	19.23918	3.085	.0020	.004038172
WDBBPRE	27.0516437	15.19097	1.781	.0749	.006592313
WDISPST	43.5194312	127.33367	.342	.7325	.000210458
WDISPRE	37.0185382	275.08322	.135	.8930	.000094827
WDOTHRPS	25.6029795	16.76628	1.527	.1267	.003595234
WDOTHRPR	-19.8005828	54.04153	-.366	.7141	.001107748
Constant	-.1000154	.55854	-.179	.8579	N/A

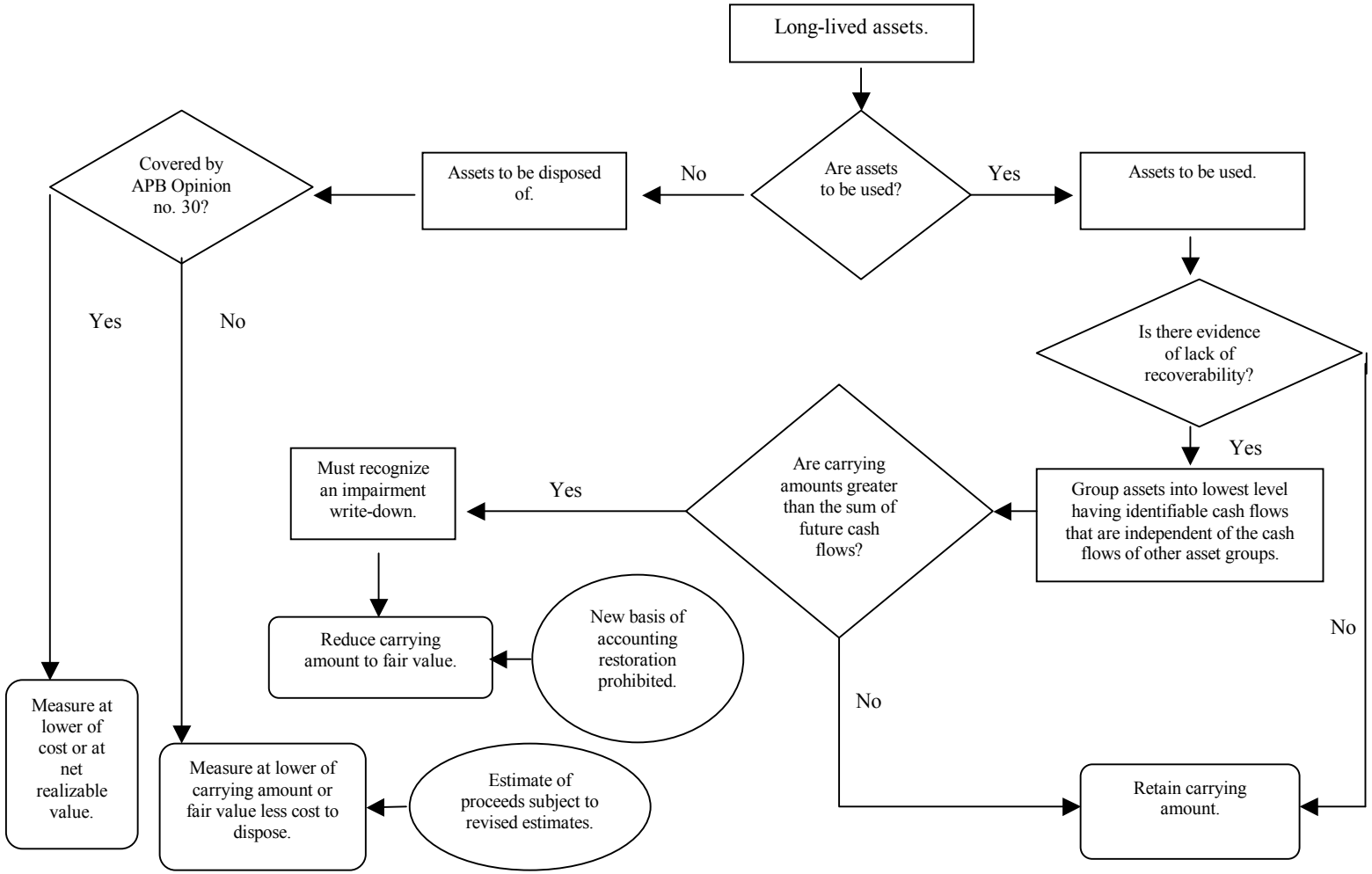
Testing “big bath” firms:

Chi-squared = 2.89 Sig. level = .08894

Testing “income smoothing” firms:

Chi-squared = .00 Sig. level = .98285

FIGURE 1:FASB STATEMENT NO. 121



Source: Titard and Pariser (1996). This flowchart is a graphical depiction of the general provisions of SFAS No.121.

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